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The Edward Stirling Lectures.[1]

LECTURE I: ATHEROSCLEROSIS: CLINICAL IMPLICATIONS OF EXPERIMENTS ON LIPID TRANSPORT IN ANIMALS.

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SIR EDWARD STIRLING, in whose memory these lectures were inaugurated, was a most gifted South Australian. He went to England for his medical education and in 1882, soon after his return, he was appointed to the first lectureship in physiology in the University of Adelaide. A little later the Adelaide Medical School was founded, and in 1900 he became the first to occupy the newly-created chair of physiology. As well as being a physiologist, he practised for many years as a surgeon; he was also Dean of the Faculty of Medicine for a considerable time. Stirling was largely responsible for determining the standards of your Medical School, which has attained such fame throughout the world. We all owe a great deal to such men. To me, a physiologist of a younger generation, it is indeed a great honour to deliver the Stirling Lectures for 1959, and I should like to thank you for inviting me here for this purpose.

These lectures concern two quite different pathological entities. The first deals with some aspects of atherosclerosis, a focal lesion comprising, among other changes, the accumulation of lipids in the aorta and large arteries; the second concerns ascites, a disorder involving the accumulation of a protein-containing fluid in the peritoneal cavity. You may wonder why I should choose two such widely differing topics. For many years I have been interested in the exchange of substances between the circulating plasma and the extravascular or tissue fluid. Experiments on the formation of lymph and on the functions of the lymphatic vessels have given us a clearer understanding of the exchange of the large protein and lipoprotein molecules across the vascular endothelium and of their transport generally.

Physiological function is such that these macromolecules do not normally accumulate in the connective tissues. Proteins and lipoproteins circulating in the plasma do escape to some extent through the vascular endothelium, but are returned to the blood-stream by the lymphatics. All the protein fractions, even the low density lipoproteins and chylomicrons, take part in this process to some extent. In the connective tissues we do not know the exact relation of the tissue fluid to the ground substance, but normally the proteins and lipoproteins are continually entering and leaving this intercellular substance, together with water and other smaller molecules. Whereas the water and small

[1] Delivered in Adelaide on June 2 and 4, 1959.

molecules and ions can readily diffuse back and forth across the membrane of the blood capillaries, the large molecules cannot. The lymphatic vessels have developed in the animal kingdom to remove such substances from the tissue fluid (Yoffey and Courtice, 1956).

The two diseases which form the subject of my lectures have this in common: the large molecules, plasma lipoproteins on the one hand and plasma proteins in general on the other, accumulate in the intercellular substance, from which normally they would be returned to the bloodstream by the lymphatics. A study of the ætiology of these disorders should, therefore, include a consideration of the transport of the protein and lipids, not only within the vascular tree, but also throughout the extracellular phase of the body.

These disorders have another feature in common; their development may to some extent be determined by what we eat. The progressive changes seen in the atherosclerotic artery, many of us think, are influenced by the amount of fat we eat, whilst ascites associated with cirrhosis of the liver may be due to a deficient intake of protein or an excessive consumption of alcohol. The incidence of these diseases is, therefore, determined in some degree by the society in which we live, whether it is a society in which the standard of living is high, such as our own, or one in which the minimum food requirements are sometimes lacking, such as we see in the highlands of New Guinea and elsewhere (Venkatachalam and Ivinskis, 1959). If this is so, we should consider why we tolerate these disorders. Even in this technological age, however, it is not easy to make sudden changes in the social or economic structure of a country, except perhaps during times of war. During World War II, for example, when the amount of fat in the diet was greatly decreased in some countries, by necessity rather than by design, the incidence of heart disease fell (Malmros, 1950; Strøm and Jensen, 1951); but in a prosperous country during peace, it would be difficult to reduce the amount of rich, creamy foods consumed by the people. Likewise it would be difficult to reduce the amount of alcohol consumed by some people. Our appetites for such commodities, once whetted, often become hard to satisfy. In some of the poorer and more backward countries, on the other hand, the composition of the diet is governed more by the economy of the country, and sometimes there is insufficient of the more expensive protein-rich foods, especially for growing children.

In many parts of the world, therefore, these diseases, atherosclerosis and ascites arising from cirrhosis of the liver, have become a social problem as well as a purely medical one, and they need to be approached from many aspects. In these lectures, however, I shall deal with but one such approach, that in which my colleagues and I have worked for some years.

Atherosclerosis: Its Incidence in Man.

Let us first turn our attention to atherosclerosis, a disorder which does not always give rise to symptoms. It is difficult to know how widespread it is, as there is no way of determining the extent of atherosclerosis in an individual during life. The results of examination *post mortem* of 300 American soldiers killed in the Korean War, healthy young men of 22 years of age, showed that there was macroscopic evidence of atheroma in 77% and in some occlusion of at least one branch of the coronary arteries (Enos, Beyer and Holmes, 1955). Such a study gives us an idea of the wide incidence of atheroma in a young, healthy population.

Vital statistics, on the other hand, deal mainly with the end results of disease. The figures show that in our country, and in several others where the mode of life is similar to that of ours, death from disease of the coronary arteries has been increasing during the past 25 years or so (Morris, 1955; Martin, 1956; Southwood, 1957; Registrar General's Statistical Review, 1957). For example, in Great Britain the number of deaths from coronary heart disease in 1957 was double that for 1947. Interpretation of such figures is not straightforward. The increase is no doubt due in part to the fact that infectious diseases now cause fewer deaths, that the life span is increased, and that diagnosis and recording are better and more accurate. Even when we take such factors into account, however, it seems that the incidence of ischæmic heart disease is increasing.

If this is really true, then we must assume that some change in our environment is the cause of the increase. There seems no doubt that this disorder is to some extent genetic in origin (Adlersberg *et alii*, 1949; Adlersberg and Schaefer, 1959), and further work is necessary to elucidate the part heredity plays, but the weight of evidence which has accumulated in recent years suggests that changes in our way of life during the past quarter of a century or more must be of considerable importance.

Every advance in science demands, and ultimately brings about, some change in the structure of human society. In our generation science has advanced at an ever-accelerating rate, and with this have come changes in our society to which the human race has to adjust itself. The social structure of our community, whether in the way we work, the way we spend our leisure or the way we eat, has changed; this has affected our metabolism in such a way that our arteries may become unable to carry to such vital tissues as our myocardium and our brain the oxygen which these tissues constantly need for survival. On the other hand, the inhabitants of some countries, where the advancement of science and technology has remained almost at a standstill, have not, as far as we can tell, suffered in the same way. For example, examination *post mortem* of Okinawans (Steiner, 1946), of African Bantus (Higginson and Pepler, 1954) and of New Guinea natives (de Wolfe and Whyte, 1958) shows that the incidence of atherosclerosis in various age groups is much less than in western countries (White, Edwards and Day, 1950; Ackerman, Day and Edwards, 1950).

The Relation of Dietary Fats to Atherosclerosis in Man.

This difference in the incidence of ischæmic heart disease has been attributed not to inherent differences in race, but to different environmental conditions. No doubt several environmental factors play a rôle; one of these may be physical exercise. In this respect, the recent study of the relationship between physical work and coronary heart disease by Morris and his colleagues at the London Hospital is of great interest (Morris *et alii*, 1953; Morris and Crawford, 1958). Their investigations indicate that men in physically active jobs have a lower incidence of coronary heart disease in middle age than men in physically inactive jobs.

Another factor, we think, is diet. You are all familiar with the concept that the amount of fat in the diet plays a prominent part in the development of atherosclerosis in man. In recent years a vast literature has appeared in the scientific as well as the lay Press on this subject (Keys and Anderson, 1955; Page, 1954, 1958; Bronte-Stewart, 1958). As the income and standard of living of a group of people rise, so does the amount of fat in the diet. In such countries as the United States and Australia, as much as 40% to 45% of calories in the food come from fat, as compared with about 25% to 30% a quarter of a century ago. In the highlands of New Guinea, on the other hand, less than 5% of calories are derived from fat. The high fat consumption in western countries is probably due partly to improved economic conditions, but advances in science and technology have made available in palatable form large quantities of fat which previously was not eaten. It is difficult these days to have a meal in a restaurant without consuming a great deal of emulsified fat in one form or another.

The problem we have to consider is this: how does the amount of ingested fat affect the development of atherosclerosis?

There is evidence to show that the quantity of saturated fats in the diet will affect the plasma level of lipids, especially cholesterol. Groups of people who eat relatively little fat have lower plasma lipid levels than those who eat a great deal. At birth and during the first year of life, the levels are the same in both groups, but from the time

of weaning the levels rise steadily with age in those people with a high standard of living (Whyte, 1958). The plasma cholesterol levels are related to the amount of fat in the diet in adults of many different peoples or groups of people (de Wolfe and Whyte, 1958). In an individual, the plasma lipid level may be raised or lowered by increasing or decreasing the amount of saturated fat in the diet (Ahrens *et alii*, 1958). Thus the plasma level of cholesterol can be altered considerably by altering the amount of fat ingested.

In very recent years much attention has been focused on the type of fat eaten. There is now much evidence which shows that, whereas saturated fats will increase the plasma lipid levels, those containing a high proportion of unsaturated fatty acids, especially linoleic acid, actually decrease these levels. One view is that the unsaturated fatty acids, or some unknown substance associated with them, increase the amount of cholesterol excreted by the bowel and thus decrease the amount reabsorbed (Ahrens *et alii*, 1958; Bronte-Stewart, 1958; Wilson and Siperstein, 1959). Although most tissues of the body can synthesize cholesterol, the plasma level can be modified considerably by the amount of cholesterol reabsorbed from the gut after excretion in the bile. Fæcal excretion of cholesterol is greater after the ingestion of vegetable oils of high iodine number than equivalent amounts of fat containing mainly saturated fatty acids. Plant sitosterols also interfere with the absorption of cholesterol and thereby may cause significant reductions in plasma cholesterol levels. The exact mechanism of this phenomenon, however, is as yet far from clear.

I think that everyone is convinced that the amount and type of fat ingested have a considerable effect on the lipid levels in the plasma. A much more controversial issue is whether those individuals with higher plasma lipid levels are more prone to atherosclerosis. No one would deny that many native races or other peoples who have a low incidence of atherosclerosis have a lower plasma cholesterol level on the average than people in western countries where the incidence is high. But in our country, it is less easy to show that the level of cholesterol is higher in people with atherosclerosis than in those without. In such a study it is impossible to get a group of individuals known to be free from atheroma. The results of many investigations of this sort are therefore not clear-cut. A satisfactory way to investigate this point would be a long-term experiment, in which the blood lipid levels were repeatedly determined at intervals during life and the results related to the degree of atheroma found *post mortem*. Such an investigation would be very tedious and would take a long time to complete. What we do know in this respect is that in conditions such as diabetes mellitus, hypothyroidism, nephrosis and essential hypercholesterolæmia or xanthomatosis, in which the plasma cholesterol levels during life are excessively raised, the incidence of atheroma is greatly increased.

Approaching the problem in another way, Morrison (1955) and Lyon *et alii* (1956) have assessed the long-term therapeutic effect of dietary fat restriction, which reduces the serum lipid levels, in groups of patients suffering from coronary occlusion. Their results suggest that such therapy prolongs life and reduces morbidity.

Clinical observations on man, therefore, suggest that the amount and type of dietary fat determine to a considerable extent the lipid levels in the circulating plasma, which in turn may affect the deposition of lipids in the arterial intima. The exact mechanisms involved in these processes are as yet ill understood, but they are being investigated from several aspects in many different laboratories.

The Plasma Lipids.

In trying to understand the possible relationship between dietary fat and atherosclerosis, we must first consider the chemical structure of the lipids in the circulating plasma. Modern methods of physical chemistry have given us a clearer conception of the physical state of the lipids in the plasma. More than 90% of the fatty acids are present as esters of glycerol, or of the more complex alcohols such as cholesterol, which are insoluble in a watery medium. These esters depend upon combinations with certain of the plasma proteins other than albumin for solubility in the aqueous extracellular fluid, and so are transported as lipoproteins. The remainder of the fatty acids in the plasma are unesterified, and interact with albumin to form an albumin-fatty-acid complex.

With the aid of the ultracentrifuge, the plasma lipoproteins may be divided into groups or families according to their densities (Oncley, 1958). Whereas most proteins have densities from 1·26 to 1·38, the plasma lipoproteins are much lighter, depending on their content of lipid. The groups have been characterized as shown in Table I. This shows three such groups.

High Density Lipoproteins.

High density lipoproteins or alpha-lipoproteins consist of a variety of lipoproteins, all with the same amino-acid pattern, but varying in density from 1·063 to 1·21 and with molecular weights ranging from 165,000 to 435,000. The average composition of the alpha-lipoproteins is protein 50%, phospholipid 25%, cholesterol (mostly esterified) 20% and triglyceride less than 10%.

Low Density Lipoproteins.

Low density lipoproteins or beta-lipoproteins form two groups, with densities of 1·03 and 0·98 (Sf values of 2–10 and 10–400) and with identical amino-acid patterns. The lipoproteins of density 1·03 have been reported to have molecular weights of $1·3$ to $3·2 \times 10^6$, while the lipoproteins of density 0·98 form a group with molecular weights ranging from 50 to 250×10^6. The lipid composition of these lipoproteins varies with their density. With decreasing density, the proportion of triglyceride increases and that of phospholipid, cholesterol and protein decreases. The ratio of cholesterol to phospholipid is reversed as compared with the high density alpha-lipoproteins.

Chylomicrons.

Chylomicrons, with a density of 0·93 to 0·94 and with an Sf value greater than 400, are particles which vary in size, but are usually 0·5 to 1·0 μ in diameter. Most of the neutral fat is carried in the plasma in this form. In composition the chylomicron consists of about 85% triglyceride and 5% cholesterol stabilized with phospholipid and protein. In a consideration of the mode of breakdown of the chylomicron, the nature of this protein is important. Evidence suggests that it may be similar to the protein in the alpha-lipoprotein molecule (Frederickson and Gordon, 1958). In the fasting state, the plasma chylomicrons are relatively few in number, but after a fat meal they may become numerous, because practically all the ingested fat enters the blood-stream through the thoracic duct in this particulate form.

Relation of Ingested Fat to the Levels of Lipids in the Plasma.

We have seen that in general the lipoprotein level in the plasma is related to the amount of fat in the diet. Let us therefore consider the probable mechanisms concerned in this process. Ingested fat enters the blood-stream via the lymphatics in the form of chylomicrons. The basic problem which arises is the fate of these chylomicrons. How and where do they leave the blood-stream, how are they broken down and how do they affect the plasma levels of the higher density lipoproteins?

Normally they disappear from the circulation very quickly. The observation by Hahn (1943) that the injection of heparin results in the rapid clearing of post-prandial lipæmia led to the discovery that the clearing factor involved is a lipoprotein lipase, which catalyses the hydrolysis of the triglyceride moiety of lipoproteins to fatty acid and glycerol. This would indicate that the triglyceride in the chylomicrons was hydrolysed intravascularly before leaving the blood-stream. There is no doubt that heparin hastens the removal of chylomicrons, and in so doing sets up an increased production of the unesterified fatty acids (U.F.A.) in the plasma. The extent to which this intravascular hydrolysis of triglycerides

TABLE I.
Some of the Characteristics of the Plasma Lipoproteins.
(*After* Oncley, 1958.)

Lipoprotein.	Density.	Sf. Values at Density 1·063.	Composition (Percentage).				
			Protein.	Phospholipid.	Cholesterol.	Cholesterol Ester.	Triglyceride.
Alpha-lipoproteins.. ..	1·14	—	57	21	3	14	5
	1·09	—	33	29	7	23	8
Beta-lipoproteins	1·03	2–10	21	22	8	38	10
	0·98	10–400	9	18	7	15	50
Chylomicrons	0·94	>400	0·2–2	7	2	6	83

occurs normally, however, is probably very small. Lipoprotein lipase does not appear to be present normally in blood except in very small amounts. This means that the chylomicrons leaving the blood-stream after a fatty meal largely do so as such, without the need for intravascular hydrolysis of the triglyceride (Frederickson and Gordon, 1958).

Assuming that this intravascular hydrolysis was of major importance in the removal of chylomicrons from the blood-stream, Gofman and his colleagues have put forward the hypothesis that the structure of all the low-density lipoproteins consists of a core of lipid surrounded by primary high-density lipoprotein molecules. The cores vary from very large cores of glyceride with small contaminations of cholesteryl ester and phospholipid, to very small residual cores composed primarily of cholesteryl ester and phospholipid. The role of the lipoprotein lipase activated by heparin is to degrade the chylomicron through almost an infinity of lipoprotein complexes down to a lipoprotein complex in the neighbourhood of Sf. 20 or beta-lipoprotein (Lindgren *et alii*, 1956).

If this intravascular degradation takes place, the nature of the protein end-product after the hydrolysis should be the same as in chylomicrons. Investigations have not yet shown that the protein in the chylomicron is the same as in the lipoproteins. There is some evidence, however, which suggests that this degradation process does not account for the bulk of the disappearing chylomicrons. Experiments have been performed in which chylomicrons with the triglyceride labelled with C^{14}–palmitate were injected intravenously into dogs. During the removal of these labelled chylomicrons from the plasma, only small amounts of radio-activity appeared in the Sf. 0–10 and high density lipoproteins, and this occurred only after the chylomicrons had long since disappeared (Frederickson *et alii*, 1958). Other experiments show that labelled chylomicrons and labelled U.F.A. are distributed differently in the tissues when introduced intravenously in the rat. This suggests that all chylomicrons do not undergo intravascular hydrolysis, but are removed from the circulation intact (Bragdon and Gordon, 1957).

The experiments of Courtice and Morris (1955, 1956), in which they showed that chylomicrons to some extent passed rapidly from the blood-stream to the hepatic lymph intact, suggested that these lipid particles could pass through the membrane of the liver sinusoids intact, without first undergoing intravascular hydrolysis. They also showed that, to a smaller degree, chylomicrons could also pass through the capillary membrane in other tissues. The experiments I have just quoted support this view. These chylomicrons enter various tissues such as muscle and fat depots, but the greater number are taken up by the liver (Waddell *et alii*, 1953; French, Morris and Robinson, 1956). Recent work on the structure of the hepatic sinusoids determined by the electron microscope shows that there are large gaps between the endothelial cells up to several thousand Ångström units in diameter, and that through these gaps the plasma is continuous with the Dissé space (Bennett, Luft and Hampton, 1959). It would seem, therefore, that chylomicrons could readily pass through the membrane of the hepatic sinusoids without the need for hydrolysis by a lipoprotein lipase. Once in the parenchymal cells of the liver, the chylomicron is rapidly broken down (French and Morris, 1958; Morris, 1958; Morris and French, 1958), and it is probably in the liver that most of the synthesis of cholesterol and the formation of lipoproteins occur. As we have seen, however, the plasma level of cholesterol seems to be determined not only by synthesis, but by the absorption of cholesterol once it enters the gut either through the bile or by mouth.

The Lipids in the Atheromatous Plaque.

The next question we must try to answer is: "How does a raised serum lipid level affect the formation of an atheromatous plaque?" The lesion of atherosclerosis is localized to the intima of the aorta and the larger distributing arteries. In the early stage the lesions form small yellow streaks, and the lipid is contained within macrophages, the origin of which is not certain. In later stages, raised plaques of fibrous and fatty material, much of which is extracellular, are formed, and these may ultimately ulcerate or become calcified, or both. In these late stages there is fragmentation of the internal elastic lamina, with involvement of the media.

There are at least two changes in the intimal tissue: an overgrowth of fibrous tissue and a deposition of lipids. How much the deposition of lipids contributes to the development of fibrous tissue is at present very controversial. There are some who believe that changes in the ground substance due to stresses or the formation of thrombi are the primary cause of the extensive fibrous thickening of the intima that occurs, and that deposition of lipids is merely a secondary phenomenon of little significance. There are others who believe that, though stress or thrombi may play some part in the initial stages, the deposition of lipids is important, not only in enlarging the lesion *per se*, but also in stimulating fibrous thickening. In this respect we do know that certain lipids, such as neutral fat, present as chylomicrons in chyle, can be readily removed from a tissue leaving little reaction, whereas others such as cholesterol and cholesterol esters may be ingested by macrophages and remain *in situ* for a long time, giving rise to an inflammatory reaction (French and Morris, 1959). It seems, therefore, that in the early stages of the development of an atheromatous plaque, the deposition of certain lipids may contribute to the fibrous changes observed in the intima.

We are concerned, however, mainly with the way in which the lipids in the lesion accumulate there. In composition, these lipids closely resemble the plasma lipids in the early stages, but in older lesions the concentration of cholesterol and of cholesterol esters increases considerably (Hirsch and Weinhouse, 1943). This could be due to the deposition of plasma lipids and the more efficient removal of the triglycerides, leaving a higher concentration of cholesterol and its esters.

It has been suggested that these lipids are deposited because the fatty acids are not so unsaturated as in normal individuals; that is, there is a deficiency of the essential fatty acids. With the development of gas-liquid chromatography for the separation of the different fatty acids, however, evidence has been produced to show that the different fatty acids in the atheromatous plaque are in approximately the same proportions as in the plasma (Tuna *et alii*, 1957; Böttcher *et alii*, 1958; Luddy *et alii*, 1958). As the lesion advances, the proportion of the

"essential" fatty acids actually increases. These results, therefore, show that the lipids in the atheroma are not more saturated because of the inability of the body to form linoleic acid and the other unsaturated fatty acids.

Passage of Lipids across the Vascular Endothelium.

The most widely accepted hypothesis for the deposition of lipids is the filtration theory, which claims that they are derived from the blood-stream (Page, 1954). The intima of the aorta comprises about one-sixth of the wall and consists of a single layer of flattened endothelium, beneath which is a mucinous ground substance containing a fibro-elastic network. An internal elastic lamina separates the intima from the media, which consists of elastic and collagenous tissue and smooth muscle.

We have very little direct evidence concerning the exchange of materials between the circulating blood and the intima, necessary for the normal nutrition of this tissue. In general the vasa vasorum supply only the adventitia and the outer half of the media; lymphatics in the adventitia probably penetrate the outer part of the media. The tissue in which we are particularly interested, therefore, is avascular, does not contain lymphatics and has a high tissue pressure. It is postulated that nutrients reach the intima by diffusion through the aortic or arterial endothelium. What happens to large molecules, such as proteins and lipoproteins or fat particles, that may filter through the endothelium is not known; in most tissues these are removed by the lymphatics as we have already seen.

In those tissues where lymphatics can be cannulated, the lymph, which we believe to be of the same composition as tissue fluid (Yoffey and Courtice, 1956), contains all the different lipid-protein complexes present in the plasma (Courtice and Morris, 1955). In different tissues the lipid gradient between the plasma and the tissue fluid runs roughly parallel with the protein gradient. As with proteins in general, therefore, so with the lipoproteins, there is an extravascular circulation from the blood capillaries, through the gound-substance and back to the blood-stream via the lymphatics.

In all animals on which these experiments have been performed, the smaller alpha-lipoprotein predominates, whereas in man there is a preponderance of the lower density beta-lipoproteins. If we feed rabbits on a cholesterol-rich diet, however, there is a large amount of beta-lipoproteins and of particulate lipid circulating in the plasma. In composition these large particles are mainly cholesterol stabilized by protein and phospholipid, and may vary in this respect from the low-density lipoproteins and chylomicrons of alimentary lipæmia. In size and electrophoretic mobility, however, they are similar. Lymph collected from the hind paw of a hypercholesterolæmic rabbit contains normally all the lipid fractions in the plasma in concentrations, on the average, of 20% of the plasma level. The lymph in such experiments is not clear, but opalescent or turbid, because of the numerous particles which can be seen under the dark ground. A similar phenomenon has been observed in hyperlipæmia produced by the injection of the surface-active agent WR1339 (Courtice, 1959).

There seems no doubt, therefore, that all the lipoproteins circulating in the blood can in some way normally enter the intercellular ground-substance in most tissues. If we injure the blood capillaries, thus rendering them more permeable, there is a much greater outpouring of these low-density lipoproteins into the tissue fluid.

It is difficult to postulate how these large molecules and particles escape from the circulation. Experimental evidence has led us to believe that the blood capillaries have pores of a certain size, through which the diffusion of plasma proteins will be restricted. But such a view cannot explain the passage of particles or even the large low-density lipoproteins.

Using the electron microscope, many workers have described the minute structure of capillaries (Pease, 1955; Palade, 1956; Fawcett, 1956; Bennett, Luft and Hampton, 1959). Bennett and his colleagues have classified capillaries into several groups, depending on the presence or absence of a basement membrane, and on the presence or absence of fenestrations or perforations. In such tissues as the liver and spleen, the capillaries have large fenestrations or perforations, some many thousands of Ångström units in diameter, between the cells, and there is little or no basement membrane. We can easily understand, therefore, how chylomicrons and the lipoproteins in general readily pass through. In other tissues, such as the intestinal villi, kidney and some of the endocrine glands, there are intracellular fenestrations or perforations which are smaller in size, about 200 to 600 Å in diameter—that is, large enough to allow the passage of the beta-lipoproteins. But these capillaries usually have a dense basement membrane which probably modifies the permeability. The third type of capillary occurs in muscle, skin, lung and central nervous system, and the wall contains no visible pores, but the endothelial cells contain vesicles which may be of importance in the exchange of materials.

These findings help us to explain on a purely physical basis the passage of the lipoproteins through the walls of some of the capillaries, but it is still difficult to understand how the large fat particles or even the smaller lipoproteins pass through the capillaries of the skin and muscle. It may be that there are some fairly large perforations which have not been seen in the sections studied because of their small number, or the vesicles described may actively transport the lipid. Even when the skin capillaries were made more permeable by histamine, no pores were observed, but the vesicles in the endothelial cells greatly increased in size up to 2000 Å in diameter (Alksne, 1959). An active transfer across the endothelial cells may occur by the method of engulfing material on the luminal side of the endothelial cell, to form vesicles which are then conveyed across the endothelial cell to discharge their contents into the extracellular substance.

If these interpretations of the evidence produced by the electron microscopists are correct, it would seem that the lipoproteins may leave the circulation in a variety of ways, depending upon the tissue involved. It does seem that large lipoproteins and chylomicrons can leave the circulation as such, but further investigations are necessary to elucidate this very basic problem in lipid transport.

It has been postulated that just as these lipoproteins pass through the endothelium of the blood capillaries, so they pass through the endothelium of the aorta or large arteries. How permeable this endothelium is, we have no idea. There is always a high pressure tending to force these large molecules through, but there is dense tissue beneath resisting such a movement. It has also been shown that individuals with hypertension are more prone to atherosclerosis, which would support the filtration theory.

Role of the Reticulo-Endothelial System in Atherogenesis.

Another way in which lipids may be transported across the aortic endothelium is by macrophages of the reticulo-endothelial system. In the early stages of the atheromatous plaque, the lipid is contained within macrophages in the subendothelial tissue, as we have already mentioned. The same is true in plaques that appear in the aorta of the rabbit during cholesterol feeding. The origin of these lipid-laden macrophages is not known. Leary (1941) believed that they were detached Kupffer cells from the liver, which had been transported in the blood-stream and become attached to, and passed through, the aortic endothelium. Duff and McMillan (1951), on the other hand, concluded that the macrophages were normally present in the sub-endothelial tissue, and that they multiplied and ingested the lipid. More recently, Poole and Florey (1958) have shown that fat-laden macrophages are present on both sides of the endothelium, and that in a hypercholesterolæmic rabbit's aorta they actually pass between the endothelial cells over a plaque. Which direction these macrophages are taking is not certain. The endothelial cells over the plaque were also shown to contain lipid.

These experiments and others have not yet determined what part the reticulo-endothelial system plays in lipid transport and in deposition of lipid in the arterial intima.

It would seem from experiments on tissue fluid and lymph that particulate fat—whether it is in the form of chylomicrons from ingested fat, which are mainly triglyceride stabilized with phospholipid and protein, or of particles formed in the hypercholesterolæmic rabbit, which are mainly cholesterol stabilized with phospholipid and protein—can pass through the endothelial walls of blood capillaries intact and be removed by the lymphatics. This would suggest that these lipids might also pass through the aortic endothelium in the same way; but the fate of these particles or molecules might here be different if they are not quickly removed.

What we should like to know is the rate at which these lipids normally pass through the aortic endothelium, to be either ingested by macrophages, or removed by the lymphatics after further passing through the intima and media. The accumulation of lipid in atheroma may be due to an increase in the normal amount of filtration; or it may be only in certain abnormal conditions of injury that the lipoproteins pass through the aortic endothelium and accumulate in the intima.

We do not know the answer to this. We do know, however, that the cholesterol and cholesterol esters which accumulate in the aorta of the hypercholesterolæmic rabbit will be slowly removed when the plasma lipids return to normal. In man also there is evidence that the lipid in an atheromatous plaque may slowly be removed. Such a regression of the atheromatous plaque is postulated in severe undernutrition (Wilens, 1947*a* and 1947*b*; Strøm and Jensen, 1951), and in wasting due to carcinoma (Wanscher *et alii*, 1951) or to tuberculosis (Malmros, 1950). How the lipid is removed is not known. If it is intracellular, it may be that enzymes in the macrophages break it down to smaller and more soluble molecules. Should this be so, it would seem that these enzymes can break the ring structure of the cholesterol molecule. If the lipid is extracellular, it may likewise be broken down by enzymes, or made more soluble by the synthesis of phospholipid and removed by the lymphatics as stabilized lipoproteins. But this is at yet speculation. More information is required concerning the breakdown of cholesterol by enzymes of the intimal macrophages.

The Synthesis of Lipids in the Arterial Wall.

Quite a different view of the deposition of lipids in the aorta is that cholesterol and phospholipid are actually synthesized *in situ*. Zilversmit and his colleagues have shown that in the hypercholesterolæmic rabbit there is a considerable production of phospholipid in the walls of the aorta. It is understandable that if cholesterol and cholesterol esters are deposited in a tissue, phospholipid synthesis may be stimulated in order to solubilize the cholesterol and so hasten its removal. These workers have also reported that the synthesis of cholesterol is also increased in such conditions. This is more difficult to understand. It may be, however, that the actual lipid synthesis of the arterial wall plays a role in the development of atherosclerosis.

What are the clinical implications of all these experiments? It is clear that a great deal more work is required before we understand the very basic mechanisms concerned in lipid transport. What happens to ingested fat or the fate of the chylomicron must be further elucidated. Meanwhile a diet of very low fat content or the substitution of fats with a high content of unsaturated fatty acids to decrease the plasma lipid levels should be advocated in cases of hypercholesterolæmia. Similar therapy in young or middle-aged patients who have survived a coronary occlusion would seem justified. To change the dietary habits of the people in general so drastically could be justified only if we had conclusive evidence that such a procedure would cause a regression of the lipid in existing atheromas, or cause some other change in the circulating blood which would decrease the incidence of thrombosis in an already atheromatous artery.

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BRILL'S DISEASE (RECRUDESCENT EPIDEMIC TYPHUS) IN AUSTRALIA.

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NATHAN BRILL in 1896 first observed in New York the occurrence of a relatively mild disease resembling typhus. It was in 1910 that he wrote a paper entitled "An Acute Infectious Disease of Unknown Origin: A Clinical Study Based on Two Hundred and Twenty-One Cases". The disease was sporadic and appeared to have lost its notoriously epidemic character, and he considered it to be a "peculiar typhus fever which has been evolved by modern improved hygiene and sanitation". Despite the title of his paper, he could find no evidence of the disease being communicable. It occurred most frequently amongst Jewish immigrants from south-eastern Europe, and headache, a maculo-papular rash, fever and malaise were the outstanding features.

During the period between 1917 and 1932, it was established by Maxcy (1926, 1929) and others that two distinct types of typhus existed. There was the classical, louse-borne, epidemic typhus caused by *Rickettsia prowazeki*, and the murine variety, the ætiological agent of which was *R. mooseri*. This latter is a disease of rats spread by fleas, with man only occasionally becoming infected from a rat by means of the rat flea. At first it was thought that Brill's disease was murine typhus. It was soon realized, however, that it did not fit into the category of either epidemic or murine typhus, since its occurrence could not be associated with either lice or rat fleas.

In 1934 Zinsser reviewed a series of 538 cases of Brill's disease which had occurred in Boston and New York during the previous thirty years. He found that in his series, 95% of the patients were born outside the United States of America, and 90% were of Jewish race, the vast majority of whom had lived in areas of south-eastern Europe where epidemic louse-borne typhus was prevalent. From the records of 126 patients he found that 76% had been in the United States for over 10 years and had had no contact with cases of louse-borne typhus during that period. There was no occupational association and no family contact between the cases.

Zinsser produced a shrewd hypothesis when he postulated that the occurrence of Brill's disease in Boston and New York was really a recrudescence of epidemic typhus occurring in patients who had been in contact with epidemic typhus in Europe many years before. He considered that if cases of Brill's disease were to occur in a louse-infested area, they might well start an outbreak of epidemic typhus. His hypothesis required a prolonged survival of rickettsiæ in the human body in a latent but viable form after the original infection.

In 1933 Zinsser and Castenada isolated three strains of rickettsiæ from patients with Brill's disease by animal inoculation, and all corresponded with *R. prowazeki*. Plotz in 1943 was able to show that in the sera of 23 patients with Brill's disease, higher complement-fixation titres occurred with antigens prepared with *R. prowazeki* than with *R. mooseri*.

In 1951 Murray and Snyder, in an excellently conducted study, isolated from patients suffering from Brill's disease seven strains of *R. prowazeki* indistinguishable from classic epidemic strains, and they were able to infect lice feeding on these patients. Final proof of Zinsser's hypothesis that man can provide an interepidemic reservoir of *R. prowazeki* required the isolation of this organism from healthy individuals who were known to have had epidemic typhus in the past, and from whom any possible source of environmental infection could be excluded. This proof was achieved by Price (1955), who made two such isolations from lymph nodes from two Russian patients undergoing surgery. These patients had migrated to the United States of America more than twenty years before, and had had no known exposure to infection since that time. It now only remains to determine what is the precipitating mechanism of a recrudescence after such a long latent period.

Occurrence.

An account of the occurrence of Brill's disease in the United States was given by Murray *et alii* in 1950, and since that time other reports have appeared. The disease has also been recognized in other parts of the world. Mooser and Löffler (1946) reported a case in Switzerland, and two cases of the disease have been recorded in Great Britain (Hawksley and Stokes, 1950; Steel and Lawy, 1956). There have also been cases in Paris (Worms, 1950), in Yugoslavia (Murray *et alii*, 1951), in Canada

(Wilt and Gemmell, 1955), in Portugal (Soares, 1950) and in South America (Meira *et alii*, 1956). Six cases occurring in Johannesburg were recorded by Gear *et alii* in 1952, and three further cases from the same locality are reported in the Annual Reports of the South African Institute of Medical Research for 1954 and 1955. One of these three patients was a non-European, who presumably contracted her original infection in the Transkei many years previously. It is to be expected that the disease will be found wherever there are foreign-born persons who have lived at some previous time in an area where epidemic typhus occurs. The disease has not hitherto been reported in Australia.

Clinical Symptoms.

Good descriptions of the clinical symptoms and the course of the disease have been provided by Murray *et alii* (1950). The onset may be gradual, but is often sudden, with chills, malaise and feverishness. Headache is the outstanding symptom and is usually extremely severe, either frontal or general, and commonly completely intractable to medication. The headache usually persists throughout the febrile period, but on occasions it may be somewhat masked by apathy or confusion. The fever usually lasts from 6 to 11 days, and it may be either continuous (102° F. to 105° F.) or remittent, with wide fluctuations. A macular or maculo-papular rash often appears between the fourth and the sixth days, and this may be generalized or sparse, and either transient or persisting into the convalescent period. In other cases no rash is observed at any time during the course of the illness. Although the disease is usually not severe, some patients may be acutely ill. The intense headache ceases abruptly when the temperature returns to normal. Convalescence is usually rapid, and the mortality is low, even in the absence of specific therapy.

Diagnosis.

There may be few signs or symptoms of diagnostic value, and the diagnosis of Brill's disease will depend entirely on one being on the alert for the condition. One's suspicion should always be aroused when confronted with a fever of unknown origin, occurring in a foreign-born person, who is known to have lived previously in an area where epidemic typhus occurs, who complains of an intense persistent headache, and who develops a macular or maculo-papular rash on the fourth to the sixth day of the disease.

The Weil-Felix test is not reliable in the diagnosis of Brill's disease, as either no agglutination is produced with *Proteus* OX19 at any time during the illness or convalescence, or the titres obtained barely attain a diagnostic level. This contrasts strikingly with the Weil-Felix reactions in classic epidemic typhus, in which, in more than 95% of the cases in a large series in Europe and the Middle East, titre of 1:200 or higher were obtained with *Proteus* OX19 (Malcolmson and Wishart, 1946). In the series of 26 cases of Brill's disease described by Murray *et alii* in Yugoslavia, none developed a diagnostic titre in the Weil-Felix test.

A reliable serological diagnosis can be made only by the use of the complement-fixation and rickettsial agglutination test, with the use of washed type-specific rickettsial antigens prepared from *R. mooseri* and *R. prowazeki*. With these tests the titres obtained with *R. prowazeki* are always higher than with *R. mooseri*. Since at least 30% of people who have lived in an epidemic typhus area may have residual complement-fixing titres for *R. prowazeki* from a previous infection many years before (Murray *et alii*, 1952), it is necessary to demonstrate at least a fourfold rise at the time of the recrudescence to establish the diagnosis of Brill's disease (Rivers, 1952).

Treatment.

Since the disease so often runs a short and mild course, specific therapy may be unnecessary. In the more severe cases, chloramphenicol and the tetracyclines, which are so effective in classical epidemic typhus, may be expected to produce a dramatic effect.

Report of a Case.

The patient was born at Lubomierz in Poland in 1926, and in 1940 he was interned in Russia in a camp at Kotlas. In the camp conditions were extremely bad, and many of the prisoners "died like flies". He remained in the camp with his family until 1941, at which time they moved to south Russia near Wrewsk. Here in 1942, his mother died of typhus. She was sick for two weeks, and then became unconscious and died at home. At the same time he, together with his brother and sister, became extremely ill for more than a week with a "high temperature". There was no hospital, no doctor, and no treatment available. Lice were common, and there were no washing facilities. Many Polish internees were dying at that time.

In 1942 he joined the Polish Cadets and served in Persia, Palestine and Egypt, before being transferred to England in 1943. He then joined the Air Force, and was not demobilized until 1948. After working in various industries in England, he migrated to Australia in 1952. His health had been very good throughout, and he had had excellent health until his present illness in March, 1958.

On the morning of March 3, 1958, the patient, now aged 31 years, awoke feeling sick, and later in the day developed a severe headache which necessitated his staying away from work for two days. He still felt generally "off colour", and the headache, which was dull and constant, frontal and midline, was only slightly relieved by aspirin, and appeared to increase in severity on standing. The headache continued; he lost his appetite and commenced to pass watery motions and felt generally ill. He was admitted to hospital on March 10, one week after the onset of symptoms.

On admission to hospital his temperature was 102° F.; he looked ill, with injected conjunctivæ, but was not obviously distressed. No rash was seen. There was a slight cough. Several enlarged tender lymph glands were palpable in both axillæ and on both sides of the neck, but otherwise no significant signs were detected on physical examination. X-ray examination of the chest revealed no abnormality. A variety of organisms, of no special significance, were cultured from the sputum, and the urine was not abnormal on microscopic examination or culture. The hæmoglobin value was 10·9 grammes per 100 ml., the leucocytes numbered 7700 per cubic millimetre, distributed as follows: neutrophils 75%, lymphocytes 20%, monocytes 4% and eosinophils 1%.

The temperature fluctuated between 102° F. and 100·5° F. for 48 hours, with one isolated normal reading during that period. It then fell to normal and no further rises were recorded during the patient's stay in hospital. The patient felt ill and feverish for three days after his admission to hospital, but his headache, which was his main complaint, disappeared as soon as his temperature became normal. No treatment, apart from an aspirin mixture, was administered, and the patient made an uneventful recovery. He was discharged from hospital on March 18, after having been afebrile and free of all symptoms for four days.

Laboratory Diagnosis.

Serum was obtained from the patient on the tenth, sixteenth, twenty-fourth and one hundred and eighty-fifth day after the onset of the symptoms. Agglutination tests with *Proteus* OX19 produced a significant titre of 1:128 in the first serum only. Complement fixation tests, using washed rickettsial suspensions of *R. prowazeki* and *R. mooseri* as antigens, showed significant titres with both, but the titres obtained with *R. prowazeki* were consistently higher than those with *R. mooseri*. The sera were forwarded to the Walter Reed Army Institute of Research in Washington, where, by courtesy of Dr. Henry S. Fuller, confirmatory complement fixation tests were performed, using periodate-treated murine and epidemic typhus antigens. With these, the titres were consistently higher with the epidemic typhus antigen, and a significant rise in titre was obtained between the sera obtained on the tenth and sixteenth days. Dr. Fuller stated in his letter "these observations are entirely consistent with the serologic pattern observed in patients with Brill-Zinsser Disease".

Our own attempts to use agglutination tests with the washed rickettsial suspensions proved unsatisfactory, because of difficulty in reading the results. Agglutination tests with *Proteus* OXK, 14 strains of leptospiræ, *Salmonella typhosa*, *S. paratyphi*, *S. schottmülleri* and *Brucella abortus*, also complement fixation tests with *Coxiella burneti*, gave negative results.

The results of the serological tests are set out in Table I.

Discussion.

Brill's disease may occur in immigrants from areas where classical epidemic typhus is known to occur, and it also occurs in populations remaining in the typhus region. These recrudescences may be delayed for long periods, even 20 years or more, after the original infection. The diagnosis will be missed in many as the disease may run a very mild course, the rash may be absent and, more often than not, the Weil-Felix reaction is negative.

The only feature which remains to be solved is the cause of the recrudescence. The rickettsiæ apparently remain latent and viable in the tissues in man for long periods, and presumably something disturbs the host resistence, allowing the recrudescence of the disease to appear. In all the recorded cases of Brill's disease, the original infection occurred before the era of the broad-spectrum antibiotics, so it is not known whether antibiotic therapy effectively removes all rickettsiæ, or whether they remain latent and are still liable to cause a recrudescence in later years. The broad-spectrum antibiotics, effective for epidemic typhus, are rickettsiastatic and not rickettsiacidal, and thus it seems highly likely that rickettsiæ can survive specific therapy, and probably remain in the tissues long after a primary attack. The possibility of a patient with Brill's disease establishing an outbreak of epidemic typhus in a louse-infested community cannot be overlooked.

TABLE I.
Results of Serological Tests.[1]

Test.	Antigen.	Serum Obtained on Day of Disease.			
		10	16	24	185
Agglutination	*Proteus* OX19 ..	128	16	16	Nil
Complement fixation.	*R. prowazeki* (washed)	512	512	256	32
	R. mooseri (washed)	32	128	64	8
	"Periodate - treated epidemic" ..	<10	>320	160	
	"Periodate - treated murine" ..	<10	80	40	

[1] The titres are expressed as reciprocals.

Summary.

The first case of Brill's disease (recrudescent epidemic typhus) to occur in Australia is reported.

The history of the disease is briefly reviewed, and the clinical features, diagnosis and treatment are discussed.

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THE EARLY CLINICAL DIAGNOSIS OF CANCER OF THE COLON AND RECTUM.[1]

By EDWARD WILSON,
From the Clinic for Diseases of the Colon and Rectum, Sydney Hospital.

SUCCESSFUL treatment of cancer of the large bowel still depends on ablative surgery. Early diagnosis is therefore essential if the salvage rate is to be improved. As with most other cancers, it is the general practitioner who usually has the first opportunity to make (or miss) the diagnosis. Fortunately, cancer of the large bowel does not usually grow rapidly or metastasize early; but, on the other hand, its onset is often insidious. In many cases there is no sign or symptom at all in the early stages, and it is only by routine examination of patients in the cancer age group that the condition may be recognized and treated whilst cure is still possible.

Although the early diagnosis of cancer of the colon is never easy and can sometimes be very difficult, the diagnosis of cancer of the rectum at all stages rests on proper rectal examination and should be immediately apparent. Once the suspicion of cancer of the colon has been aroused, repeated examinations are required until the cause is found, and occasionally even an exploratory laparotomy is indicated.

When first seen, 12% of this series of patients with cancer of the colon and 7% of the patients with cancer of the rectum were inoperable for various reasons. The difficulty of early diagnosis is again demonstrated by the fact that, in some of these inoperable cases, the symptoms were mild and had only recently appeared.

[1] Read at a meeting of the Old Sydney Hospitallers' Club, Sydney, September, 1958.

No patient should be accepted as suffering from a relatively minor lesion of the bowel without a thorough investigation. Every patient over the age of 30 years who complains of any symptom referable to the rectum, anus or abdomen should have a digital examination *per rectum*, a sigmoidoscopy and perhaps a barium enema X-ray examination.

If a predisposing condition such as familial polyposis or chronic ulcerative colitis exists, cancer is to be feared until a proctectomy and total colectomy have been performed. It is depressingly true that the clinical picture of many of these patients is unchanged until the cancer is well advanced. Any slight change in signs or symptoms in them must therefore be regarded with the greatest suspicion.

It is also to be remembered that 8% of patients with cancer of the colon or rectum develop another primary cancer of the bowel. Thus, a regular post-operative "follow-up" of these patients must be instituted.

Results.

For this paper the early signs and symptoms in a personal series of 200 cases of cancer of the large bowel were reviewed. This series included 100 consecutive cases of cancer of the colon and 100 consecutive cases of cancer of the rectum.

Table I contains a list of the initial symptoms in these cases of cancer of the colon and rectum. In Table II the initial symptoms in the same cases of cancer of the colon are considered according to their site in the colon; and in Table III the initial clinical findings in these cases of cancer of the colon are considered. In each of the 55 cases of cancer of the colon listed in the lower half of Table III, only one clinical sign was detected or the sign listed was the one which was probably the first to appear.

TABLE I.
Cancer of the Large Bowel.

Initial Symptom.	Site of Primary Tumour, Number of Cases.	
	Colon.	Rectum
Abdominal discomfort or pain	47	8
Constipation	15	8
Diarrhœa	12	31
Loss of weight	12	10
Lassitude	7	2
Abdominal mass palpated by patient	5	—
Dysuria	2	—
Bleeding *per rectum*	—	17
A feeling of poor emptying after defæcation	—	11
Anal pain	—	6
Soiling of the clothes	—	4
Discharge due to a fistula	—	3
Total	100	100

From this study the following statements may be made.

There is no characteristic sign or symptom of cancer of the large bowel, be it early or late.

In the early stages of cancer of the large bowel the symptoms are often extremely vague.

There is a difference in the initial symptom in 60% of the cases of cancer of the colon compared with cases of cancer of the rectum.

In the early stages of cancer of the large bowel there may be some change in bowel habit, but there is not an alternating constipation and diarrhœa unless impaction of a mass of fæces has occurred above a constricted area. Any change in bowel habit in the early stages is more likely to be just some irregularity or the need for a little increase in aperients. In other cases there may be a slight increase in the number of bowel actions per day.

If a cancer is situated in the cæcum or in the ascending colon, lassitude or dyspepsia appears at an early stage in most, but not all, cases.

Once a mild degree of obstruction has developed anywhere in the large bowel, there may be a feeling of fullness in the abdomen, especially in the right iliac fossa and presumably because of distension of the cæcum. When the obstruction is in the sigmoid colon, meals may be followed by discomfort in the left iliac fossa.

TABLE II.
Cancer of the Colon.

Initial Symptom.	Site of Primary Tumour, Number of Cases.		
	Cæcum and Ascending Colon.	Transverse Colon.	Descending and Sigmoid Colon.
Abdominal discomfort or pain	12	15	20
Constipation	—	—	15
Diarrhœa	—	6	6
Loss of weight	9	—	3
Lassitude	7	—	—
Abdominal mass palpated by the patient	5	—	—
Dysuria	—	—	2
Total	33	21	46

In some cases actual pain is the initial symptom, its site varying according to the position of the growth.

Loss of weight is often greater than expected from the size of the growth, whereas a few patients with even moderate-sized lesions have lost no weight at all.

TABLE III.
Cancer of the Colon.

Initial Clinical Finding.	Site of Primary Tumour, Number of Cases.		
	Cæcum and Ascending Colon.	Transverse Colon.	Descending and Sigmoid Colon.
No positive clinical finding (45% of cases):			
(*a*) Diagnosed by barium enema X-ray studies	4	9	15
(*b*) Diagnosed on sigmoidoscopy	—	—	13
(*c*) Diagnosed at operation	2	—	2
Clinical signs present (55% of cases):			
Abdominal mass palpable	11	6	3
Wasting	8	5	2
Rectal mass palpable	—	—	7
Pallor	6	—	—
Dilated bowel	—	1	3
Elevated temperature and leucocytosis	2	—	—
Perinephric abscess	—	—	1
Total	33	21	46

The warning that patients with cancer of the bowel are sometimes diagnosed as suffering from hæmorrhoids alone is worth repeating; but, whilst it is not impossible for bleeding to be the only symptom of cancer of the bowel, this is not likely. In the majority of such cases, when bleeding occurs and really is the initial symptom, it is very quickly followed by the appearance of other symptoms.

Even though there is no apparent anæmia, hypoproteinæmia, electrolyte deficiency or vitamin deficiency, some patients with cancer of the large bowel complain of weakness at an early stage.

Cancer of the colon may present with an elevated temperature and a leucocytosis, but this is not a common onset.

Cancer of the rectum rather than cancer of the colon is likely to be associated with a feeling of incomplete emptying of the bowel after defæcation. However, even this symptom is not diagnostic, for it may also be found in the presence of a large benign villous tumour of the rectum or of impacted fæces.

Soiling of the underclothes may be the initial symptom of a cancer of the rectum. In the later stages of this disease overt incontinence frequently develops.

Pain in the anal region due to a cancer of the rectum usually indicates invasion of the anal canal by the growth.

Methods of Examination.

To put the treatment of cancer of the large bowel on a more scientific basis, specific tests for the early diagnosis of the primary lesion and of metastases are required. Unfortunately, such tests do not yet exist.

The diagnosis of cancer of the large bowel (whether it is made early or late) depends on the history, clinical examination, sigmoidoscopy and X-ray examination. Occult blood tests, although not diagnostic, are useful in increasing a suspicion of the presence of a cancer of the colon. Examination of the colonic washings for cancer cells after the method of Papanicolaou is likely to give positive results only in cases which may be diagnosed readily by other means, and thus it is rarely used in this connexion.

Most patients appreciate the thoroughness of the doctor who performs a digital rectal examination, and the same applies to sigmoidoscopy. Under the Medical Benefits Scheme, sigmoidoscopy is listed as a benefit, and if that stimulates more doctors to become proficient in the use of the sigmoidoscope, it will be to the good of the patients. However, nothing is worse than failing to recognize a cancer of the lower bowel and lulling the patient into a false sense of security.

No patient is examined with a sigmoidoscope until a digital examination has been performed. It is easier to recognize a cancer of the lower bowel with the finger than with a sigmoidoscope. Also, it is kinder to the patient to make sure that there is no painful lesion of the anus or anal canal before the instrument is inserted.

Unless the bowel is full of liquid fæces, it should be possible to pass at least a child's-sized sigmoidoscope to its full length at the time of the initial examination and without special preparation. If a suspicious lesion is seen, portion will be removed for histological examination.

If the result of sigmoidoscopy is unsatisfactory or if the lower bowel contains blood for which no cause can be found, a barium enema X-ray examination is indicated.

It must be stressed that a barium enema X-ray examination is practically useless in detecting an early carcinoma of the rectum. Most cancers of the rectum are palpable *per rectum*, and so are some cancers of the colon, for they may cause a temporary intussusception and come within reach of the finger. On occasions, higher growths in a redundant loop of bowel lie in the pelvis and are palpable through the rectal wall. Even in the diagnosis of cancer of the colon, barium enema X-ray examinations are subject to error. For instance, adherent fæcal material may give a false positive result, whereas small growths may be overlooked.

Summary.

The early signs and symptoms in a personal series of 200 cases of cancer of the colon and rectum have been studied in detail.

It is concluded that an increased preparedness to suspect the presence of a cancer of the large bowel on flimsy evidence and to follow up that suspicion is essential if more cases are to be recognized at the stage when cure is yet possible.

PHARYNGO-JEJUNOSTOMY FOR CORROSIVE STRICTURE OF THE ŒSOPHAGUS, WITH REPORT OF A CASE.

By H. J. RICHARDS,

From the Thoracic Unit of the Royal North Shore Hospital of Sydney, Sydney.

FORTUNATELY corrosive stricture of the œsophagus is uncommon in this country, and when it occurs the lumen can usually be kept open and ultimate clinical cure achieved by skilful dilatation. However, one cannot turn the clock back, and there will always be the occasional patient who presents with an œsophagus which is virtually obliterated along most of its length. The strictures may commence in the pharynx and end in a scarred, shrunken stomach. Furthermore, it is likely that a number of patients with severe and probably amenable strictures would prefer the alternative of an operation to the discomforts of a prolonged period of gastrostomy life and repeated bouginage, provided that the operation has an acceptable mortality and morbidity.

Over the past sixty years, many ingenious attempts have been made to reconstruct the œsophagus, and the most commonly used methods have been the placing of the stomach in the posterior mediastinum, or the jejunum in the same site or in a subcutaneous or retrosternal position. When the strictures are below the level of the aortic arch, the posterior mediastinal route is generally chosen. When the upper strictures are higher than the aortic arch, the anterior routes appeal in the treatment of sufferers from benign stricture, because it is unnecessary to remove the diseased œsophagus as it is in malignant disease, and the upper anastomosis is more easily carried out in the neck.

According to Professor Grey Turner (1943), Bircher introduced the use of the antethoracic skin tube in 1894 (Figure I). It was a long-drawn-out affair of multiple stages, and unfortunately the skin tube was attacked by the gastric secretions, which not infrequently caused fistulæ and strictures. It seems that the whole procedure was often abandoned in despair by all concerned. César Roux, in 1907, reported a successful case in which he used an isolated loop of jejunum brought up in the subcutaneous tissue of the chest wall (Figure II). Many other methods and combinations of methods were used, but most of them have survived only as diagrams in the surgical literature. Lexer's jejuno-dermato-œsophagoplasty (Figure III) was said to have been the most successful (Grey Turner, 1943), and was still being used in principle by Yudin in 1944, in cases in which he found his jejunal loop too short to go into the neck.

The Russians seem to have had the greatest opportunity of studying this problem. In addition to the usual suicidal and accidental causes of corrosive stricture, they have an added hazard in the custom of placing bottles of sulphuric acid between the window panes to keep them clear of frost in the winter months. In 1944 Yudin, then a colonel in the Soviet Army and an Honorary Fellow of the Royal College of Surgeons, published his experiences of 80 œsophagoplasties. Yudin usually carried out his operation in stages. At the first stage he mobilized a length of jejunum and brought it up subcutaneously in front of the sternum, usually into the neck. At the next stage he anastomosed it side-to-side to the pharynx, if this was possible. If it was not possible to do this, he made a pharyngeal stoma and completed the new œsophagus later by plastic methods. Figure IV illustrates the completed operation.

In 1950, Robertson and Sarjeant made their contribution, when they found that the potential space between the sternum and pericardium could be opened up with ease by tunnelling blindly from the abdomen below and the neck above, keeping close to the back of the sternum. They did their operation in one stage, and it seems quite possible that this operation marks the final stage of a sixty years' evolutionary period. According to Betts *et*

alii (1955), the Russians have also adopted (or invented) this operation. They report that at a surgical meeting in India in 1955, Professor B. A. Petrov, who succeeded Yudin in Moscow, stated that Yudin had carried out 318

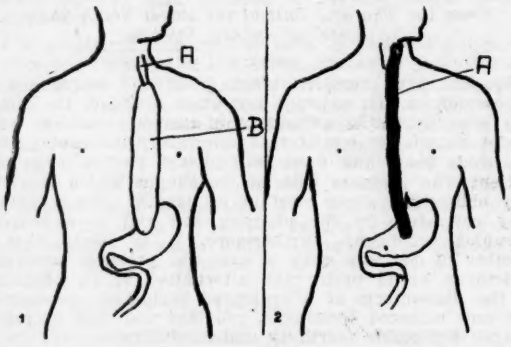

FIGURE I.—Bircher's procedure (1894); A, cervical part of the œsophagus; B, ante-thoracic skin tube. FIGURE II.—Roux, 1907; A, ante-thoracic part of the jejunum.

operations for corrosive stricture of the œsophagus, and that in the five years since Yudin's death[1] he had treated 321 more patients, to give a total of 634 with a 4·3% mortality rate. The procedure now adopted is the

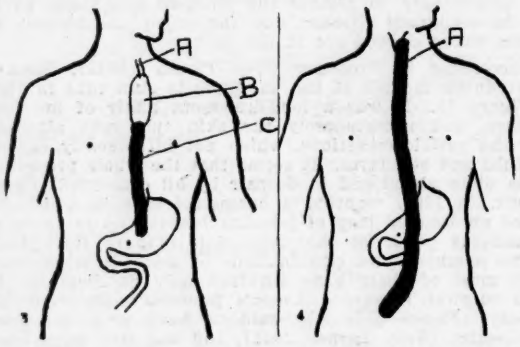

FIGURE III.—Lexer, 1908; A, cervical part of the œsophagus; B, skin tube; C, ante-thoracic part of the jejunum. FIGURE IV.—Yudin, 1944; A, ante-thoracic part of the jejunum.

Robertson and Sarjeant operation, which Petrov stated was originally developed by a Russian surgeon, Eremeev of Omsk, in 1946. Petrov claimed to have carried out 25 of these operations with three deaths.

[1] The London *Times* of Tuesday, June 15, 1954, carries the following notice in its obituary columns: "Professor Serge Yudin, who was elected an Honorary Fellow of the Royal College of Surgeons in 1943, died suddenly yesterday at the age of 64, according to Tass, the Soviet news agency." On the other hand, the date of the meeting at which Petrov spoke is given as January 1, 1955, and thus his reported statement puts the date of Yudin's death at some time towards the end of 1949. Credence can be given to the statement, provided one accepts the implications, and Yudin's obituary written by Sir Gordon Gordon-Taylor and published in September, 1954, makes it apparent that he was a candidate for an untimely end. Sir Gordon Gordon-Taylor wondered what had happened to him since about 1948, when he seemed to have dropped out of sight. He had his troubles with the régime, which even made him "take his wife along with him on his visits to the battle front, reckoning her danger less in the 'forward area' than in the capital city of the U.S.S.R.". The real date of Yudin's death is undoubtedly obscure; but it is clear from his obituary that his correspondence had stopped, and that he had ceased to exist as far as was known on this side of the Iron Curtain for some years before the announcement of his death in *The Times*.

Report of a Case.

A farmer, aged 60 years, suffered a hydrochloric acid burn of his œsophagus, and presented three months later with severe dysphagia and emaciation. X-ray examination with a bolus of thin barium showed that he had a stricture starting in the lower end of his pharynx and extending to his thoracic inlet. For about one centimetre in its centre no lumen could be picked out in the films. The stricture commenced again at the level of the aortic arch, and the lower two-thirds of his œsophagus were narrowed to the diameter of a thread. At œsophagoscopy the smallest bougie would not pass the highest stricture, which was six inches from the upper incisor teeth. Persistent attempts were made to have him swallow a thread to guide bougies down or draw them up through a gastrostomy, but he could not, or would not, do this. The Robertson-Sarjeant procedure was advised and readily accepted.

The abdomen was opened through a long upper left paramedian incison, and a Roux loop of jejunum was prepared, long enough to reach to the upper border of the thyroid cartilage. The left side of the neck was then opened by an incision along the anterior border of the sterno-mastoid. The superior belly of the omo-hyoid was divided, and the middle thyroid veins and inferior thyroid artery were ligated and divided. The mediastinum was tunnelled by a finger passed behind the strap muscles and sternum above, and a hand was passed into the anterior mediastinum below after the diaphragm had been detached anteriorly. The jejunal loop was then brought up behind the transverse colon through the substernal tunnel and anastomosed side-to-side with the lower end of the pharynx. The neck incision was closed, a corrugated rubber drain being left *in situ*, and the abdominal operation was completed by implanting the afferent loop of jejunum into the side of the efferent loop. The afferent loop measured 4 in. from the duodeno-jejunal flexure. A gastrostomy was established and the abdomen was closed.

The immediate post-operative course was smooth, and the corrugated drain was removed from his neck next day. Gastrostomy feeds were started on the fourth day, and all was well until the sixth day, when sudden obstruction occurred and large quantities of bile-stained fluid were aspirated from his gastrostomy. He was no better by the ninth day, and his abdomen was reopened with the provisional diagnosis of afferent loop obstruction. Everything seemed to be in order. There was no distended gut, and the stoma was widely patent. After this, the aspirated fluid dropped to nothing; obstruction again occurred at the end of the third day, and after 48 hours without improvement his abdomen was again reopened, with the object of short-circuiting the anastomosis. The third part of the duodenum was exposed by incising the overlying transverse mesocolon, and it was found to be moderately distended with gas. Duodeno-jejunostomy was carried out as described for that apparently extinct disease, duodenal ileus. From then on his progress was satisfactory. Gastrostomy feeds were recommenced on the fifth day, and at the end of three weeks he was taking a full soft diet by mouth without difficulty. Examination of his fæces revealed a few starch granules and a trace of split fat. There were no undigested meat fibres. He was discharged home six weeks after the last intervention, swallowing normally and rapidly gaining weight. Figure V shows the post-operative X-ray pictures with a barium bolus.

Discussion.

The main advantages of the retrosternal operation of Robertson and Sarjeant are that the distance to be bridged is shorter, requiring a shorter jejunal loop, and there is no cosmetic disability from visible intestine under the skin of the chest wall, as occurs when the presternal route is used.

The exact site of the upper anastomosis depends on the site of the highest stricture. Fortunately, the pharynx and the upper end of the œsophagus are usually spared in corrosive stricture, and the cut end of the cervical part of the œsophagus can be used for anastomosis; this reduces the length of jejunum requiring mobilization. When the pharynx is involved, as in the case presented, pharyngo-jejunostomy is obligatory.

A logical question raised by the operation concerns the advisability of implanting the lower end of the mobilized jejunum into the stomach, as did Roux and Lexer (Figures II and III). Yudin tried this method, and found that the terminal loop hung down and its contents

were delayed regardless of whether the anastomosis was made with the anterior or posteror wall of the stomach. Furthermore, the method entails interference at the root of the mobilized mesentery, where damage to the blood supply would be disastrous. Yudin does not mention the later development of anastomatic ulcer and stricture, which one would expect to be a hazard with the method. Such implantation seems to be unnecessary, because the

FIGURE V.
Lateral view of chest, showing the barium-filled jejunal transplant. A little barium can be seen in the strictured œsophagus posteriorly.

presence of the excluded stomach, draining into the jejunum, appears to be sufficient to prevent the nutritional disturbances known to follow œsophago-gastrectomy. Yudin, speaking from his experience "with dozens of patients who have for many years taken nourishment through the new œsophagus, thus excluding the stomach", states: "We have observed no disturbance in metabolism, in hæmatopoiesis, or in growth or development in children". Robertson and Sarjeant followed Yudin, as did Betts *et alii* (1955), who reported eight cases from South India, two of them in children, aged three and two and a half years. They confirm Yudin's statement.

Summary.

Salient points in the evolution of the Robertson-Sarjeant operation of reconstruction of the œsophagus are traced. A case is presented.

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Reports of Cases.

A SAFER MAMMAPLASTY.

By GRAHAM HUMBY,
Sydney.

THE procedure to be described has been evolved to eliminate the haunting fear of necrosis in the lateral flaps of the classical Biesenberger operation. It is done through a single incision running down from the nipple to the submammary groove, and does not need a second operation to "remove the scars".

Before it is described, perhaps it would be fashionable to justify such an operation for what might be called by some cosmetic or æsthetic reasons. It can be truly said that the girl (the subject of the photographs in this paper) had had her life made miserable by having such gross pendulous breasts. At the age of 14 years her school friends used to call her "the old cow"; at 17 years these things were the direct cause of her engagement

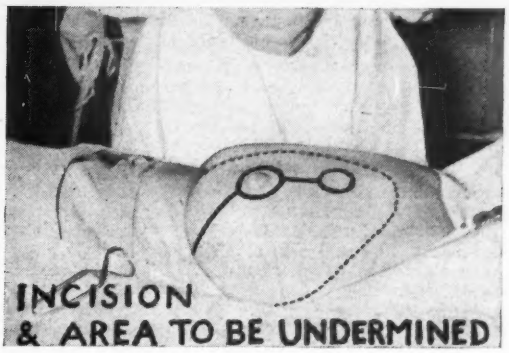

FIGURE I.

being broken off. At 19 years she went into the Forces, and the girls used to write on the walls rude rhymes about her breasts. When she eventually married, on her wedding night her husband asked: "How old did you say you were on the marriage certificate?" She has never been able to wear "off the shoulder" dresses, and has never dared to sunbathe on the beaches.

With this précis in mind, it is left to the reader to decide whether the operation was justified in this particular case.

The first problem in mammaplasty is the position of the nipple. The elaborate pre-operative geometry that some employ is usually wrong, because it does not allow for the fact that, pre-operatively, there is very little mammary gland beneath the skin where the nipple should be, and in consequence the appointed location is upset when the remains of the mammary gland are swung up and stuffed into place—a flat plane being thereby converted into a three-dimensional one.

In this case, the areola measured 3 in. in diameter with the nipple flaccid. The top of a four-ounce "Bovril" bottle was selected as a template—a diameter of 1·25 in. My

pen and ink markings are always failures, so I scratch the areola around the bottle top with the back of a No. 15 blade. Another circle is scratched on the skin at the 11 o'clock position of the original areola and nearly touching it. These circles are incised and then joined by the shortest line, and the incision is carried down to the submammary sulcus.

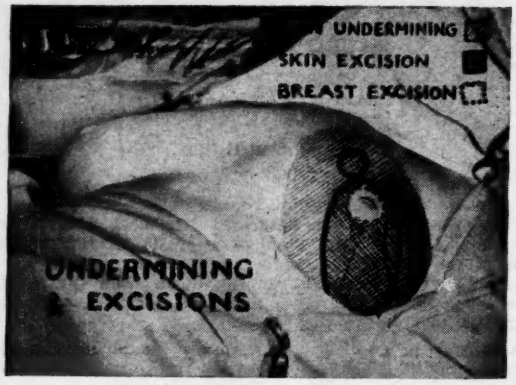

FIGURE II.

The skin and subcutaneous fat (0·25 in. thick except through the areola, where the thickness is determined by the thickness of the areolar skin) are undermined down to the submammary sulcus, towards the sternum, out to the axilla and up towards the clavicle. A temporary stitch is put in the nipple areola to mark its 12 o'clock position for subsequent repositioning (Figure I).

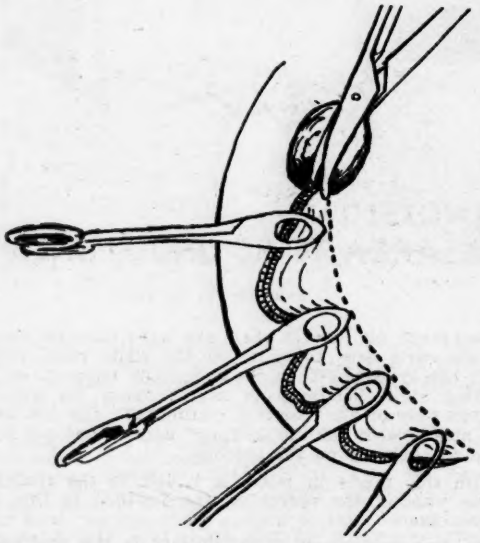

FIGURE III.

The lower and lateral segment of the gland is then released from its moorings to the chest wall by dissection through the comparatively bloodless plane of fat superficial to the pectoral fascia from the 2 o'clock to the 8 o'clock position, and a portion is removed. The amount removed in this case is shown by the thick black interrupted line in Figure II. There are no rules to determine the amount to be removed; only a good eye can decide, especially as the breasts are often different in size. Weighing the breasts with scales does not add to the accuracy of the operation.

The 8 o'clock pole is then swung up in the usual way and sutured to the 2 o'clock pole with fine chromicized catgut. This is a "trial run" to see if the nipple can be sutured into the new position without any tension, and also to ensure that the new position is the right one. If

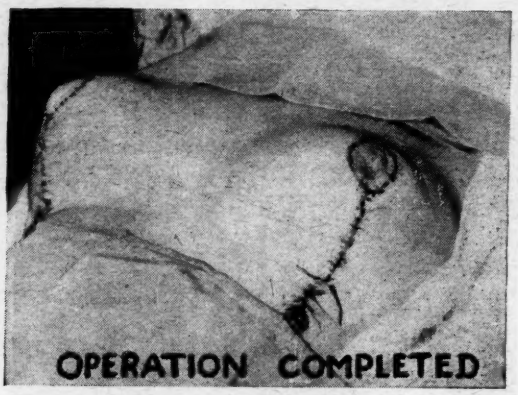

FIGURE IV.

there would be too much tension, the lower pole must be swung further up and, if necessary, past the 2 o'clock pole and onto the anterior surface towards 12 o'clock and shamphered off. If the new nipple position looks wrong, a further bottle-top incision must be made in the right place. In practice, however, the best position for the nipple in heavy breasts is usually found in the location described earlier.

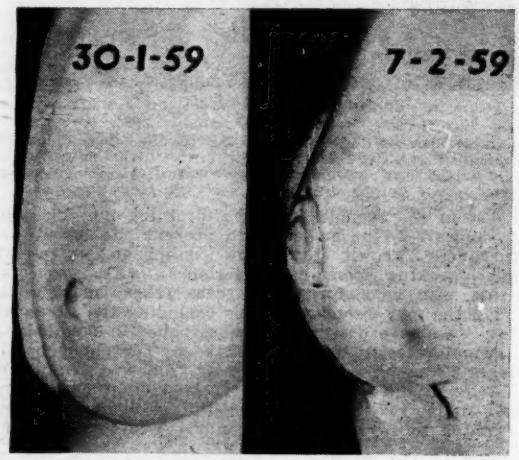

FIGURE V.

The nipple is the last thing to be sutured into position, in case a mistake has been made in excising the correct amount of redundant skin. Again, there are no rules to determine how much to excise. I find that the best way is to gather up the excess skin in Lane's forceps, starting with one at the bottom of the incision in the submammary sulcus and spacing the others out about an inch apart until the new nipple position is reached. After a few tries (with more or less skin gathered up in the forceps), the curve of the lower part of the breast is decided on, and the two layers of excess skin are then cut off with curved scissors.

A few interrupted sutures are put in the vertical incision, so that a final assessment can be made that the nipple is lying snugly in its new position with its temporary stitch at 12 o'clock. If this is found to be so, a few interrupted stitches of number 6 atraumatic eye-curved gossamer silkworm gut are inserted around the areola and these are followed by a continuous suture of the same material. A continuous suture of the finest silk from the areola to the submammary sulcus and the insertion of two corrugated drains 0·25 in. wide, which are placed in the undermined area on both sides of the gland as far up as they will go, complete one breast.

Apart from the making of allowances for unequal size, the operation on the second breast is but a repetition of the first.

Finally, and according to tradition, no plastic operation could be called complete without "before and after" photographs.

All the patient's symptoms and signs have been removed, and she is deeply grateful.

UNUSUAL PRESENTATION OF PYLORIC STENOSIS.

By PETER MORRIS,
Sydney.

THE outstanding feature of this case presentation is the absence of the usual clinical manifestations of pyloric stenosis. The patient presented in a precomatose condition with nystagmus and twitching of the extremities, yet with profound generalized muscle weakness and flaccidity and a very low blood pressure. The reason for these signs was found later to be severe electrolyte depletion as a result of excessive vomiting.

Clinical Record.

Mrs. A, aged 55 years, was admitted to St. Luke's Hospital, Darlinghurst, after having spent two weeks in a rest home for what she called "nervous collapse". Her medical history was entirely confined to the two weeks in the rest home, during which time she suffered from weakness and exhaustion, and on two occasions she fainted whilst in the upright posture, but rapidly regained consciousness. She admitted occasional vomiting after food during the past four weeks, but did not consider this as part of her illness. She also complained of memory defect and mental dullness. She attributed her whole illness to an upset with her employer, and on the history alone her state appeared due to a psychological disurbance. There was no medical past history of consequence, no previous operations, and no admissions to hospital.

On physical examination, she was in an apathetic mental state and had profound generalized muscle weakness with twitching of the thumb and forefinger of both hands, perhaps more in the left hand than in the right. There was a coarse horizontal nystagmus. The finding of a systolic blood pressure of 80 mm. of mercury with no detectable diastolic pressue caused immediate concern.

Cerebral arteriography was attempted to exclude an intracranial space-occupying lesion, but was unsuccessful as the blood pressure fell alarmingly when puncture of the internal carotid artery was attempted. The blood pressure was raised to 110/70 mm. of mercury with a noradrenaline "drip", and the serum electrolyte level was urgently estimated.

Adrenal failure was thought to be a possibility, and was even more strongly considered when the patient developed a petechial rash on the abdomen and lower part of the back. Cortisone was given to prevent the onset of adrenal failure.

At times, small amounts of fæculent fluid were vomited, and a lesion of the small intestine was considered, but careful clinical examination and plain X-ray examination of the abdomen revealed no abnormality. The patient's condition was too poor to permit a barium meal X-ray examination, which was postponed till her condition improved.

The results of the serum electrolyte estimations were as follows: sodium, 124 mEq/l.; potassium, 2·8 mEq/l.; chloride, 72 mEq/l.; calcium, 8·4 grammes per 100 ml. The carbon dioxide combining power was 43 mEq/l., and the blood urea level was 190 mg. per 100 ml.

This was clearly a picture of gross deficiency of the extracellular ions, sodium, potassium and chloride, with alkalosis and probable extrarenal uræmia. It was evident at this stage that the vomiting, which was casually mentioned in the history, had probably been frequent and excessive, a fact which was subsequently confirmed by the patient's son.

Intravenous therapy was commenced with a 4% solution of dextrose and one-fifth normal saline together with noradrenaline; cortisone was given intramuscularly. Potassium was withheld at the start because of anuria, but as the urinary output improved, Darrow's solution was given with added dipotassium hydrogen phosphate to raise the potassium intake to about 200 mEq per day. At times tetanic spasms of the hands were noticed, but these ceased when the electrolyte levels of the plasma were raised.

The electrocardiogram showed changes attributed to potassium deficiency. An electroencephalogram was not performed.

The patient's general condition during the first four days in hospital was extremely poor, and she lapsed into flaccid coma. The prognosis at this stage was considered to be grave. Extensive intravenous therapy with Darrow's solution and a side "drip" of glucose in a 4% solution and one-fifth normal saline with noradrenaline to maintain the blood pressure above 100 mm. of mercury systolic effected a dramatic recovery.

She regained mental alertness, but had complete amnesia for the first four days of her stay in hospital. The electrolyte values were restored to the following: sodium, 153 mEq/l.; potassium, 4 mEq/l.; chloride, 104 mEq/l. The carbon dioxide combining power was 29 mEq/l. The blood urea level dropped to 70 mg. per 100 ml. as the urinary output improved.

When the deficiency of potassium and chloride was restored and oral feeding commenced, visible peristalsis and splashing in the stomach could be elicited. These signs were not present in the stage of gross potassium deficiency. A barium meal X-ray examination was performed, which showed complete obstruction to the flow of barium from the stomach, even when antispasmodics were employed. The patient was again questioned about previous dyspepsia, vomiting, food habits, abdominal pain and weight loss, but she denied any previous medical history.

A laparotomy was performed, which showed an inoperable carcinoma involving the pylorus, pancreas and structures of the posterior bed of the stomach. It was considered inoperable, and a gastro-enterostomy was performed.

Discussion.

In a series of cases of pyloric stenosis with electrolyte depletion reviewed by Black and Jepson (1954), the lowest serum sodium value was 129 mEq/l., the lowest serum potassium value was 3·7 mEq/l. and the lowest serum chloride value was 79 mEq/l. All these values are higher than those in the foregoing case. No doubt the delay in diagnosis allowed the electrolyte depletion to proceed to a marked degree.

It was suggested by Cooke *et alii* in 1952 that the alkalosis in the extracellular fluid was associated with potassium depletion, caused by an exchange of potassium ions from inside the cells for hydrogen ions derived from the extracellular fluid. In this way the extracellular fluid would become more alkaline and the cellular fluid more acid.

Conclusion.

Mrs. A illustrates the electrolyte disturbances induced by pyloric stenosis and excessive vomiting. The mode of presentation in a lethargic, precomatose state, without any clinical evidence of pyloric stenosis, is unusual, and may have been due to loss of tonus of the musculature of the stomach as a result of potassium deficiency. The response to intravenous electrolyte therapy was very good; retention of sodium, potassium and chloride occurred. When the potassium deficiency was restored, the tonus returned to the stomach and visible peristalsis was seen. The diagnosis of carcinoma was unexpected, as no mass was palpable during the illness before operation. Chronic duodenal ulceration was thought to be most likely from the barium meal X-ray findings, but the lack of any suggestive history of ulcer would favour carcinoma as a diagnosis.

References.

BLACK, D. A. K., and JEPSON, R. P. (1954), "Electrolyte Depletion in Pyloric Stenosis", *Quart. J. Med.*, 23: 367.

COOKE, R. E., SEGAR, W. E., CHEEK, D. B., COVILLE, F. E., and DARROW, D. C. (1952), "The Extrarenal Correction of Alkalosis Associated with Potassium Deficiency", *J. clin. Invest.*, 31: 798.

Reviews.

Doctor in the Asian Beyond: The Edge of Tomorrow. By Thomas A. Dooley; 1959. London: Victor Gollancz Limited. 8¼" × 5¼", pp. 233, with illustrations. Price: 22s. 6d. (Aust.).

THIS is the story of a young American doctor who, with three assistants, went to the ancient kingdom of Laos in 1956 to give voluntary medical assistance. He had considerable difficulty in getting there, as there were objections to be overcome from both the American authorities and the Laotian Government; but of the need there can be no question, as Laos, with a population of two million people, had only one doctor who was adequately qualified by western standards. The story of how this young medical team went first to the village of Vang Vieng and later to Nam Tha in the north, close to the borders of China and North Vietnam, is told with humour and refreshing frankness. The team lived amongst the people, and although they made it their business to have their quarters clean and made themselves as comfortable as they could in a primitive way, Dooley is able to write that no one could ever say that they lived apart from the natives in an air-conditioned "American compound". The outcome of all this was that they won the affection of the people and the confidence of the Government. The medical conditions faced were staggering and often heartbreaking, but Dooley and his team were dedicated men not to be daunted by such problems. With no wish to establish any sort of foreign domination Dooley eventually turned over his hospital and all its resources to local people and returned to America. There he was able to establish a new organization MEDICO (Medical International Cooperation) as a division of the International Rescue Committee, with Dr. Albert Schweitzer as Honorary Patron. This has all happened in the past four years, so it is too soon to know what will become of this work and its influence. But its potential for good is great. "Doctor in the Asian Beyond" is thoroughly interesting and entertaining but always challenging. It should be widely read.

Curare and Curare-Like Agents. Edited by D. Bovet, F. Bovet-Nitti and G. B. Marini-Bettòlo; 1959. London: D. Van Nostrand Company, Limited; Amsterdam, London, New York and Princeton; Elsevier Publishing Company. 9½" × 6¼", pp. 478, with many illustrations and tables. Price: 85s. (English).

THIS excellently presented book gives the results of a symposium held at Rio de Janeiro in 1957. It deals comprehensively with the history of the development of curare, and with the botany and the sources of the Loganiaceæ and Menispermaceæ in South America. The material given here is very novel and interesting, especially for those whose interests may lie in the direction of anthropology. Another section treats the chemistry of the curare-like alkaloids both quaternary and tertiary nitrogen-containing.

The main section of the book deals with the pharmacology of muscle relaxants, both natural and synthetic. There is, of course, an introduction to the events occurring at the neuro-muscular junction. However, the details are rather elementary and would not interest a serious worker in this field. On the other hand, the sections that deal with the mode of action of the relaxants are comprehensive. The information supplied is complete and exact up to the time of the symposium (1957). The point is made that we can no longer classify the relaxants simply into non-depolarizing and depolarizing. This difficulty of classification has been dealt with more adequately since 1957.

There are notes on the pharmacology of the anticholinesterases; but again, the clinical usefulness of these is not mentioned, nor are their drawbacks. There are several unusual articles, such as those on the effects of relaxants on blood pressure and on the mechanism of curare fixation by cells, and especially one on blood levels of *d*-tubocurarine in man. The section on clinical application is short, and will not supply the anæsthetist with any new information.

The book is very well arranged and will be of interest to the general reader and the research worker. The reader must be prepared for the fact that several articles are in French.

Hospital Treatment of Alcoholism: A Comparative, Experimental Study. By Robert S. Wallerstein, M.D., in collaboration with John W. Chotlos, Ph.D., *et al.*, with an introduction by Karl A. Menninger, M.D.; Menninger Clinic Monograph, Series Number 11; 1957. London: Imago Publishing Company Limited. 9¼" × 6", pp. 224. Price: 42s. (English).

THIS book represents the results of a detailed study of four different types of treatment in four groups of male patients in a Veterans' Administration Hospital. In all, 178 patients were involved, with a hospital period of 60 to 90 days, and a follow-up period of two years. All patients were treated in a closed ward setting, and the control group received "*milieu* therapy", which involved an activity programme coupled with group and individual psychotherapy. The other three treatment groups received, in addition, "Antabuse" (tetraethylthiuram disulphide) or conditioned aversion therapy or group hypnotherapy. Patients were allotted for each treatment at random, except when the physical condition of the patient excluded "Antabuse" or conditioning therapy. Changes were recorded in terms of degree of abstinence, social adjustment, subjective assessments and structural changes in personality configuration. The types of patient in each group were described and personality characteristics evaluated. The effects of treatment were then recorded in terms of diagnostic groupings and psychiatric classification.

Of the four treatments, "Antabuse" was the most successful, and compulsiveness was said to be the most significant personality factor affecting prognosis with this drug. Passivity in a patient was said to improve hypnotizability and prognosis with group hypnotherapy, though not when the passivity cloaked latent homosexuality. Similar statements appear about other personality characteristics in relation to prognosis with one or other method of treatment. In contrast with the "Antabuse" group, in which half the subjects were favourably influenced, the *milieu* and conditioning approaches favourably affected only 25%.

Wallenstein and his collaborators are aware of some of the limitations and inadequacies of this experiment, but there are many others which do not receive mention. The population treated consisted of alcoholic ex-servicemen and, in particular, those requiring admission to a closed psychiatric ward. The treatments used represented a limited range of the total therapeutic spectrum available. We thus have an artificial restriction of therapy in an artificially restricted environment. The groups are not properly matched statistically, one group consisting of only 39 patients as compared with another group of 50, and when one begins to try to correlate certain social variables as well as diagnostic categories, the differences between the groups become still more marked. No mention is made of patients who became worse, and it is interesting to note, in the final figures, that 21 of 50 conditioned-reflex patients were lost to follow-up investigation, as compared with only seven of the "Antabuse" group. The numbers in each group are not sufficient to allow for these differences statistically. Also, in view of the large amount of subjective evaluation and retrospective history-taking involved, it is thought that the impressions recorded should not be taken as in any way definite. It is debatable also how far one can regard reduction in the severity of the drinking as an improvement, rather than use a standard of total abstinence for this purpose.

Two important factors which were not considered in the management of these patients, and which appear to be fundamental to success in therapy, are insistence on a goal of total abstinence and follow-up investigation with the help of Alcoholics Anonymous. These have helped the medical profession to raise its percentage of cures considerably and to develop a community readiness to seek treatment earlier.

The title of this book is misleading. It could lead unwary physicians to buy the volume with the expectation of finding a balanced account of the treatment of alcoholism, and they would inevitably be disappointed. It is, however, of interest to those working in the field, and especially to those wishing to do research in the subject, if only to avoid the many methodological pitfalls illustrated therein.

Gynæcomastia. By Peter F. Hall, M.D. (Sydney), M.R.A.C.P., M.R.C.P., with a foreword by P. M. F. Bishop, M.D., F.R.C.P.; Monographs of the Federal Council of the British Medical Association in Australia, Number 2; 1959. Sydney: Australasian Medical Publishing Company Limited. 9¾" × 7", pp. 158, with 24 illustrations. Price: 35s.

THIS book is an attractively presented comprehensive survey of the problem of gynæcomastia. There is a complete record of the ancient and modern medical literature supplemented by the results of the clinical and laboratory study of a series of 85 cases seen at Guy's Hospital with another series of 25 seen at the Sydney Hospital.

Gynæcomastia is defined as "enlargement of the breast in males due to increase in the glandular component of the organ". The distinction from enlargement due to fat in obese subjects is emphasized. It is pointed out that gynæcomastia has many causes, ranging from those associated with birth, puberty and the involutional period to liver disease, thyrotoxicosis, Addison's disease, tuberculosis, syphilis, various drugs (œstrogen, androgen, chorionic gonadotrophin), radioactive isotopes and testicular lesions. Emphasis is laid on the importance of œstrogen stimulation as the common denominator of many of these various conditions.

Klinefelter's syndrome, consisting of small testes, azoospermia, raised gonadotrophin levels and gynæcomastia, is discussed in full. It is suggested that the destruction of the germinal epithelium causes excessive pituitary gonadotrophin, and this stimulates the Leydig cells to produce œstrogen, which causes the gynæcomastia in this condition.

Treatment is that of the cause. "Essential" gynæcomastia is best treated by surgery if it is a source of embarrassment.

This is the second monograph to be issued through the Medical Monograph Fund of the Federal Council of the British Medical Association in Australia. As it appears to be the only comprehensive single publication on gynæcomastia, it is an important addition to medical literature.

The Practice of Sanitation. By Edward Scott Hopkins and Wilmer Henry Schulze; Third Edition; 1958. Baltimore: The Williams and Wilkins Company. Sydney: Angus and Robertson, Limited. 9" × 5¾", pp. 498, with 141 illustrations. Price: 88s.

FIRST published in 1951, this handy guide to the practice of sanitation has reached its third edition within eight years, and after a reprinting of each of the previous editions. Whilst concise and readable, it is also generally successful in conveying the pertinent facts of environmental sanitation as practised at the present time in the United States. With such a large and complex subject to cover, minute detail cannot be expected in a book of under 500 pages; but it is surprising how much information has been condensed into the available space, and it should prove valuable to medical men, health inspectors and municipal and shire engineers, and to nurses interested in public health.

The first portion of the book deals with food sanitation, a field in which the United States has high standards, which impress the average visitor when he meets the careful individual packaging of foods served in hotels and drug stores and notes the food-handling methods in the supermarkets. The book gives a good short account of food and milk sanitation, touching on all the essentials; but naturally, when such a subject is covered in 90 pages, much detail has to be omitted. Hence one can hardly complain when such an important public health problem as food additives is dismissed in a single paragraph.

The problems of providing a pure water supply are on the average greater in the United States than in Australia. Here we do not have to supply great cities from rivers grossly polluted by human and industrial wastes from cities higher up; but it is of value to read how the difficulties are overcome. Rural water supplies do not require so much discussion; but even with this item the emphasis in the United States varies from that in rural Australia. Here great use is made of tanks for the storage of rainwater caught from the roof of the dwelling, but in the book that aspect is dismissed in six lines.

Waste disposal is adequately treated in the space available. Ventilation and air pollution provide material for well-balanced chapters, an interesting item being a discussion of the ventilating problems of vehicular tunnels. Useful chapters are included on the sanitation of public transport and on camps, parks and motor courts.

Perspectives in Virology: Twenty Specialists Report on Recent Progress in Various Fields of Virological Research. Edited by Morris Pollard; 1959. New York: John Wiley & Sons, Inc. 9" × 5¾", pp. 324, with illustrations. Price $7.00.

THIS book records the scientific papers and discussions of a symposium formed from the world's leading virologists to honour the late Dr. F. R. Beaudette. The symposium and the publication of this book were made possible through the generosity of Gustav Stern, of Hartz Mountain Products Corporation of New York. The symposium was arranged by a programme committee consisting of Beard, Dubos, Huebner, Pollard, Shope and Steele, who carefully selected the participants. Some of the outstanding papers were contributed by H. Fraenkel-Conrat ("Chemical Nature of the Infectivity of Tobacco Mosaic Virus"), by Werner Schäfer ("Some Aspects of Animal Virus Multiplication"), by John F. Enders *et alii* ("Recent Advances in Knowledge of the Measles Virus") and by C. H. Andrewes ("Asian Influenza: A Challenge to Epidemiology").

In many instances, those reading papers and taking part in the discussion allowed their imagination to range beyond the present facts of virus research and to speculate on the future. This was especially evident in the field of viruses and cancer, and is itself stimulating for further research. In addition, the technical details of recent experimental work have been described in detail in communications from Eagle, on "Nutritional Requirements for Cell Growth and Poliovirus Propagation", from Puck, on "Quantitative Measurement of Virus Action by Cell Plating Technics" and from Stewart and Eddy, on "Properties of a Tumor-Inducing Virus Recovered from Mouse Neoplasms".

This publication illustrates the latest trends in virus research. It indicates clearly the diverse techniques and widespread ramifications that the study of viruses is taking, and also shows that there is a possible common biochemical theme to the problems of (*a*) cancer, (*b*) microbial genetics and (*c*) bacteriophage and animal and plant virus replication.

The book is well printed and clearly set out, with a subject index. The 312 pages comprise 12 chapters, each followed by a discussion. The epilogue comes from the pen of R. J. Dubos, and is entitled "Tulipomania and the Benevolent Virus".

As this publication represents the current thoughts of the leading authorities in virus work today, it provides interesting and authoritative reading for the many individuals who are thinking about and studying viruses in plants, animals, insects and bacteria, as well as for those engaged in diagnostic work and teaching in the fields of public health and hospital microbiology.

Immunity and Virus Infection: Symposium held at Vanderbilt School of Medicine, May 1-2, 1958. Edited by Victor A. Najjar, M.D.; 1959. New York: John Wiley & Sons, Inc. London: Chapman & Hall, Limited. 9" × 5¾", pp. 272, with many illustrations. Price: $10.50.

SIR MACFARLANE BURNET was Flexner Lecturer at the Vanderbilt University School of Medicine in 1958. His contributions to virology and immunology inspired a symposium, of which this volume records the major contributions. Burnet himself contributes two chapters. The first deals with theories of antibody production, a subject developed at greater length in his recently published book "The Clonal Selection Theory of Immunity". The second is an interesting personal account of his own researches

with influenza virus and bacteriophage, in which he outlines a philosophy of scientific research curiously at variance with his own activities.

There are 18 other essays in the book, several of which are good reviews of fields of considerable medical and scientific interest. Haurowitz puts forward the chemist's view on the importance of persistence of the antigenic determinants, which he believes act as a direct template for antibody production. Drawing analogies from induced enzyme synthesis in bacteria, as Burnet himself did 20 years ago, Pappenheimer suggests that if it is postulated that the antigen induces two complementary structures instead of only one, many of the biological difficulties of the Haurowitz theory disappear.

There are several immunological papers of medical interest. Wedgewood gives a comprehensive review of the properdin system, once held to be of major importance in natural resistance, but now assigned a minor role, and Kunkel's group summarize recent studies of the high molecular weight gamma-globulins associated with rheumatoid arthritis. Cann's review of the separation and purification of antibodies is perhaps the most comprehensive essay in the book, and several authors deal with different aspects of the newest area of immunological interest, immunological tolerance.

Barry Wood's account of the genesis of fever in infectious disease touches a neglected field of physiological pathology.

Most of the other essays are concerned with viruses. Some of these suffer from the fact that their authors have already presented much the same material at greater length elsewhere; but Groman's account of conversion to toxigenicity in *Corynebacterium diphtheriæ* is the best available review of this subject.

Three papers are concerned with poliomyelitis. Sabin's account of immunity in poliomyelitis contains much familiar material; but the essays by Paul and Fox on virus dissemination by vaccinated individuals contain interesting material not previously presented in summarized form.

On the theoretical side, Luria has brought up to date his concept of the nature of viruses, based primarily on the great advances of the last few years in the understanding of the relationship of bacteriophage genetic material and the bacterial genome.

Altogether, this book comprises an interesting group of essays on various aspects of viruses, and immunity. Some of the material is familiar to specialists in these fields; but several essays provide a clear and up-to-date account of subjects which are of general interest to the student of infectious diseases, and of the diseases associated with disorders of the immune-response mechanism.

Books Received.

[The mention of a book in this column does not imply that no review will appear in a subsequent issue.]

"Released Mental Patients on Tranquilizing Drugs and the Public Health Nurse", by Ida Gelber, Ed.D., R.N.; 1958. New York: New York University Press. 8¼" × 5", pp. 152. Price: $3.

The first in a series of nursing research monographs from the Department of Nurse Education, New York University.

"Transplantation of Tissues: Skin, Cornea, Fat, Nerves, Teeth, Blood Vessles, Endocrine Glands, Organs, Peritoneum, Cancer Cells", edited by Lyndon A. Peer, M.D. with twelve contributors; Volume 2; 1959. Baltimore: The Williams & Wilkins Company. Sydney: Angus and Robertson, Limited. 10" × 6¼", pp. 704, with 252 illustrations. Price: £11.

The title is self-explanatory.

"Molecules and Mental Health", edited by Frederic A. Gibbs, M.D.; 1959. Philadelphia and Montreal: J. B. Lippincott Company. Sydney: Angus and Robertson, Limited. 9" × 5¾", with 52 illustrations. Price: 52s. 3d.

The procedings of two conferences of the Brain Research Foundation: "Amines in Relation to Brain Function and Behaviour" and "ACTH Treatment of Hypsarhythmia".

"Statistical Methods in Biology", by Norman T. J. Bailey, M.A., D.S.C., 1959. London: The English Universities Press, Limited. 8½" × 5½", pp. 212. Price: 46s. 6d.

An elementary account of the chief statistical methods liable to be needed in practice designed for workers in the biological and medical sciences.

"Case Histories in Hypnotherapy", by Arnold Furst and Lester T. Kashiwa, M.D.; 1959. California: The Genii Publishing Company. Sydney: Angus and Robertson, Limited. 5½" × 8½", pp. 163. Price: 65s.

The authors are a professional hypnotist and a medical practitioner respectively.

"Ophthalmic Nursing", by J. B. Foster, M.A. (Cantab.), M.B., B.S., D.O. (Melb.), D.O.M.S. (Lond.), F.R.C.S., F.R.A.C.S.; 1959. Sydney: Angus and Robertson, Limited. 8½" × 5½", pp. 144, with 40 illustrations. Price: 25s.

The author is Ophthalmic Surgeon to the Alfred Hospital, Melbourne.

"The Queensland Pocket Year Book, 1959", No 10; Issued under instructions from The Right Honorable the Treasurer by S. R. Carver, Commonwealth Statistician; compiled by S. E. Solomon, Deputy Commonwealth Statistician and Government Statistician. Commonwealth Bureau of Census and Statistics, Queensland Office. Brisbane: S. G. Reid, Government Printer. 4¼" × 3", pp. 128. Price not stated.

The latest available statistical information on a variety of matters in the State of Queensland.

"Le Malattie del Collageno in Otorinolaringologia (Misenchimopatie Reattive 'Regionali')" by Vincenzo Ricci; 1959. Pisa: Omnia Medica. 9¾" × 6¾", pp. 272. Price not stated.

A treatise on collagen disease in oto-rhino-laryngology. It is entirely in Italian.

"Preventive Aspects in the Teaching of Pathology", Seventh Report of the Expert Committee on Professional and Technical Education of Medical and Auxiliary Personnel; 1959. World Health Organization Technical Report Series, No. 175. Geneva: World Health Organization. 9¼" × 6¼", pp. 30. Price: 1s. 9d. (English).

The findings of an expert committee which met in October-November, 1958.

"Grundriss der Physiologischen Chemie für Veterinärmediziner, Humanmediziner und Biologen", by M. Schenk, M.D., D. Phil., and E. Kolb, 1959. Jena: Veb Gustav Fischer Verlag. 9¼" × 6¾", pp. 347, with illustrations. Price: 23.80 DM.

Entirely in German.

"Peripheral Facial Palsy: Pathology and Surgery", by K. Kettel, M.D.; 1959. Copenhagen: Ejnar Munksgaard, A.S. 10" × 6¾", pp. 341, with 127 illustrations. Price not stated.

The author is Chief Surgeon in the Department of Oto-Rhino-Laryngology, Frederiksborg Central Hospital, Hillerod, Denmark.

"The Kinetics of Cellular Proliferation", edited by Frederick Stohlman, Jr., M.D.; 1959. New York and London: Grune & Stratton, Incorporated. 10" × 6½", pp. 472, with many figures. Price: $5.75.

The edited proceedings of a conference on the subject held in Salt Lake City, Utah, in January, 1959.

"An Experiment in Home Safety Education in a Small Community in Western Australia, with a Brief Analysis of Subsequent Developments", by J. T. Carr, 1959. 13" × 7½". Price not stated.

The author is Executive Officer of the Health Education Council of Western Australia.

"Healthy Motherhood", prepared by the Medical Staff of the King Edward Memorial Hospital for Women, in conjunction with the Department of Obstetrics and Gynæcology of the University of Western Australia and the Health Education Council of Western Australia, 1958. 8½" × 5½", pp. 30, with many illustrations. Price not stated.

A little book for expectant mothers—and fathers.

The Medical Journal of Australia

SATURDAY, DECEMBER 19, 1959.

WHO IS MY NEIGHBOUR?

THE closer people live together, the greater is their potential impact on one another, the stronger are their friendships, and the more bitter are their quarrels. This is the age-old question of neighbours, which has taken on a new importance in the modern world. The globe has been made to shrink in a remarkable way by instantaneous communications, swift transport and a new political and economic awareness of one another by nations and peoples. The result is a situation filled with great peril and with great potential for good. It is one worth thinking about as Christmas approaches, not only because this is the season of goodwill, when we all tend to look rather wistfully towards the hope of better things, but also because it marks the birth of the carpenter-teacher, Jesus of Nazareth, who gave the world a new concept of neighbourliness. In one of the best known of his many stories, the parable of the Good Samaritan, he made it clear that to him a true neighbour was one who, moved with compassion at finding a fellow man in distress, leapt over barriers that would stop lesser men, whether they involved national hostility, danger, practical difficulties or what you will, and gave what help he could.

In medicine this is a familiar concept. Without the leaven of compassion, medicine can become just a business or a technique, but we need to remind ourselves of this sometimes, and the Christmas season would seem a good time to do so. Perhaps no worker in the thorn-choked fields of man's world has so tenderly and persistently and successfully cultivated the plant of compassion as Jesus of Nazareth did, and today as much as ever it is needed in both the big and the little things of life. Indeed, it may be said with truth of this plant, that its leaves are for the healing of the nations. True neighbours are at a premium in a shrinking world.

This may seem rather airy idealism, but it can be brought down to earth. Perhaps it is sufficient at the moment to refer only to the neighbourly responsibilities of our own country. Australians are slowly becoming aware of their geographical neighbours in the countries to the north and north-west, but relatively few are aware of, or sharing in, the sincere bids being made to win friendship among them. The Colombo Plan, in which Australia is an active participant, is a valuable contribution to this on the governmental level. Our restricted immigration policy is to many people's minds not so happy, but it must be conceded that, within its considerable limitations, it is administered sympathetically. An opportunity to which many people are alive, but to which others are sadly indifferent, is the presence in Australia of thousands of Asian students, both government-assisted and private; a little sincere practical friendship shown towards them at this stage is worth more than a great deal of talking. On the essentially medical level it is encouraging to note the contributions to goodwill that have been made. The services of some of our leading physicians and surgeons have been made available to our Asian neighbours under the Colombo Plan, and in other ways wanted assistance has been given on this level. In a different category is the sacrificial contribution made by dedicated individuals — for example, those serving under the Volunteer Graduate Scheme. This scheme is an intergovernmental agreement, according to which the Australian Government pays the fares and certain minor allowances of young Australians accepted for employment by the Indonesian Government. Those accepted work on a basis of economic and social equality with their Indonesian counterparts, sharing their life as they serve. Present participants are working in the fields of health, science, education, engineering and architecture, and social science. They include three doctors, a bacteriologist and a pharmacist. Anyone who wishes to know more of this scheme and what it is doing — and it is important — will be interested in *Djembatan*, the quarterly newsletter of the Volunteer Graduates' Association for Indonesia.[1] The September number, which is a special issue, contains an article by Dr. Vern Bailey, who from practical experience as a Volunteer Graduate since 1955 makes clear both the challenge and the difficulties. His conclusion is illuminating: "The nutritional and agricultural and economic prospects are more than enough to test one's faith in civilization, in mankind, and in God, both in daily life alongside the people, and in viewing the situation steadily as a whole and in historical perspective. It is a situation for men of faith, not of mere idealism." This comment of Dr. Bailey's recalls to mind the fact that this very sort of thing has been done for generations and is still being done by missionary doctors and nurses and others, often under great stress, but confident in their vocation and moved with compassion. It recalls also Dr. Thomas Dooley's book "Doctor in the Asian Beyond", reviewed in this issue. Dooley served his calling to the limit of his capacities and resources first in Vietnam among the refugees and then in the kingdom of Laos. Some will think this book naïve, some may be irritated by its occasional self-conscious references to America and Americans, but much of it is moving, and no armchair critic has a right to be cynical or patronizing about someone who is on the job. Not the least important thing in the book are the words of James Michener which Dooley quotes with the endorsement of first-hand experience:

> Most people in Asia will go to bed hungry tonight.
>
> Most people in Asia live in grinding poverty.
>
> Most people in Asia have never seen a doctor.
>
> Most people in Asia believe anything different would be better than what they have, and they are determined to get it.
>
> Most people in Asia have never known civil liberties.
>
> Most people in Asia believe that freedom of enterprise means the right of the Western Colonial powers to exploit them.

[1] The Association welcomes interest and inquiries. Its headquarters are at Union House, University of Melbourne, Carlton, N.3, Victoria.

Most of the people in Asia distrust people with white skins.

Most people in Asia are determined never again to be ruled by foreigners.

These statements provide food for deep and solemn thought. There is rebuke and challenge in every one of them. The important thing about them for us in Australia is that they all relate to those who are our neighbours. It is surely relevant then for us to ponder the conversation that followed the telling of the story of the Good Samaritan:

Which now of these three, thinkest thou, was neighbour unto him that fell among the thieves?

And he said, He that shewed mercy on him.

Then said Jesus unto him, Go, and do thou likewise.

Current Comment.

NONE FOR THE ROAD.

IN the days when Mr. Pickwick and his friends took the Muggleton Telegraph along the frosty road to Dingley Dell for Christmas, nobody questioned their right to take "enough ale and brandy, to enable them to bid defiance to the frost that was binding up the earth in its iron fetters, and weaving its beautiful network upon the trees and hedges". They did not have to drive the coach, and indeed even the coachman could count on the horses to get them there in due time without too much supervision.

It is otherwise today. Most people drive their own coaches, and the lively horses under the bonnet (10, 20, 40, 50 or more of them) do only what the driver tells them to do. If he is at all uncertain what to tell them or a bit slow to change his instructions, they can make the modern motor-car a weapon of swift and terrible destruction. There is probably nothing quite so efficient and so readily available for initiating this chain of events as alcohol.

We realize, of course, that doctors know this. It is elementary to those with the slightest knowledge of physiology and pharmacology. But with Christmas and New Year festivities on every hand, they could do a great deal of good and help to reduce the toll of the road by tactfully acquainting their patients and friends with these facts, and especially with the pernicious and indefensible character of the custom of "one for the road". Perhaps as good an approach as any is to draw the motorist's attention to the brief but sufficient statement of Dr. L. G. Norman, Chief Medical Officer, London Transport Executive, in an article in the December issue of *The Open Road*, the official organ of the N.R.M.A. (N.S.W.):

Recent work has shown that small amounts of alcohol impair driving skill and therefore there is only one safe rule, and that is not to drink before driving. Drinking and driving do not mix.

I said above that driving is a skill and when an individual wants to exercise a high degree of skill at any game the last thing he would think of would be to consume alcohol before it. The same thing applies to driving.

AMERICAN NEUROSURGERY IN WORLD WAR II.

As part of the official history of the Medical Department of the United States Army in World War II in the professional or clinical and technical series, the first of two volumes on neurosurgery has been published.[1] It deals with organization and administration in Part I and with the management of head injuries in Part II. Volume II will deal with injuries of the spinal cord and of peripheral nerves. The completed manuscripts for these volumes were delivered in June, 1947; but publication was not proceeded with at the time. This was unfortunate, as much of the material is now outmoded, although the original objectives have been attained—namely, to assemble all pertinent data into easily readable volumes and thus provide adequate source material for succeeding military neurosurgeons.

The first chapter opens with an historical note on the development of the neurosurgical services in the Zone of the Interior from their inception in May, 1942, when the specialty had no trained assistants, medical or nursing, no separate wards in hospitals and no specialized neurosurgical equipment other than that provided privately by the neurosurgeons themselves (reminiscent of the position which existed in the hospitals of the 2nd Australian Imperial Force in the Middle East in 1940-1942). However, after a top-level conference at the end of August, 1942, progress was rapid, so that by the end of 1944 there were 19 neurosurgical centres with 9250 beds in "units" of 500, and by the middle of 1945 the bed state was 21,900. These figures were higher in proportion to the numbers treated in the British neurosurgical units, as it was laid down that all patients with lesions of the brain, spinal cord, peripheral nerves and sympathetic nervous system must be sent as soon as possible to neurosurgical centres. It was also laid down that the diagnostic aspects of all neurosurgical injuries should be the task of a neurologist. This policy does not appear to have been a sound one, as it converted the neurosurgeon into an operating machine, contrary to earlier conceptions of the complete neurosurgeon of the Cushing era. Further difficulties were encountered because the neurologist was made to work under the officer in charge of the medical division, whereas the neurosurgeon had to work under the officer commanding the surgical division; thus the true spirit of team-work was destroyed. The initial shortage of trained neurosurgeons was overcome by sending selected young surgeons, with a good basic training in general surgery, to attend a special course of instruction in neurosurgery, consisting of 192 hours of "fundamentals" at the Neurological Institute, New York, and 576 hours in selected Army hospitals. The comprehensive details of this excellent course are set out at the back of the book in Appendix A. The over-all success of the organization of neurosurgical services in general army hospitals in the Zone of the Interior is obvious from the final figures for the period May, 1942, to September, 1945—namely, 60,592 admissions with only 332 deaths at 26 centres, a mortality rate of only 0·55%.

Chapters 2 and 3 complete Part I of the book. They give accounts of the organization and working of the neurosurgical services in the Mediterranean and European theatres of operations. Fixed establishments of neurosurgical units with general hospitals were found to be uneconomical, and so auxiliary surgical groups of general surgeons with neurosurgical training were attached to, and moved with, evacuation hospitals, grouped in centres. By these arrangements, it was possible for one neurosurgical team to cope with the patients from 5000 general hospital beds. As a corollary, definite rules had to be laid down regarding what treatments were to be given at what levels in the lines of evacuation. Although complaints were general concerning lack or paucity of neurosurgical equipment, the picture on page 76 of the standard neurosurgical kit supplied would have delighted the eyes of any Australian Army neurosurgeon.

Due credit is given to facilities placed at the disposal of the American neurosurgeons during the early training periods in England prior to D-Day by the British and Canadian head injury clinics. Brigadier Hugh Cairns is given his correct spelling and title; but the present Sir Charles Symonds would scarcely appreciate being referred to as "Air Vice-Marshal C. P. Simon, R.A.M.C.", on page 71.

[1] "Medical Department, United States Army: Surgery in World War II: Neurosurgery", Volume 1; Prepared and published under the direction of Major General S. B. Hays; Editor-in-Chief, Colonel John Boyd Coates, Jr., M.C. Washington, D.C.: Office of the Surgeon General, Department of the Army. 9¾" × 6¼", pp. 488, with 130 illustrations and charts combined, 19 tables. Price: $5.00.

Chapter 4 provides a short historical note to open the second part of the book, which is concerned with the technical management of head injuries. Chapters 5, 6 and 7 follow, with a description of the technical principles adopted in caring for the early and late effects of head injuries in the Zone of the Interior, and in the Mediterranean and European theatres. In all cases, the accent was on early *débridement* and dural repair or replacement with hinged pericranium or galea, and on the later insertion of tantalum or acrylic plates. These chapters were written by different authors, and a good deal of repetition is noted. Chapters 8 and 9 are among the best in this volume. They deal fully with all aspects of open acute cranio-cerebral injuries, and especially their repair by plastic methods. Full attention is given to wounds involving the ventricles. Many of the lessons thus learnt might well be followed by any surgeon called upon to deal with similar injuries occurring in civilians, especially as a result of road accidents.

The following Chapter 10, on infections, gives some interesting sidelights on the early uses of penicillin and other antibiotics; but many neurosurgeons and neurologists would not agree in advocating an average intrathecal dose of 50,000 (and at times 100,000) units of penicillin every 12 or 24 hours. According to the British school, such a dose should not exceed 20,000 units a day, and then it should be given only in a very dilute solution, otherwise fits may occur. Chapter 11 is devoted to "blast concussion and cerebral injuries due to explosion waves"; this terminology replaces the "shell shock" of World War I, which came to be associated with the psychogenic disturbances of warfare, such as anxiety neuroses, hysteria and even malingering. "Blast concussion" was diagnosed only when the patient's brain had received a shock-wave transmitted through the air or water from a nearby explosion. Early and progressive electroencephalograms were very enlightening, and evidence of true "blast concussion" was found only in 7·9% of all casualties labelled "neuropsychiatric", combat exhaustion being a factor in its development. A good deal of research and experimental work was done in an attempt to elicit the cause of the syndrome, and much literature is quoted about the various theories. The next chapter is devoted to cranioplasty, carried out for the repair of gaps in the bones of the cranial vault, with plates made from tantalum and the acrylic resins. Rather too many technical details are given regarding the preparation of the necessary moulds and plates—more suited to dental mechanics than busy traumatic neurosurgeons.

In Chapter 13, post-traumatic epilepsy is discussed in all its aspects by Earl Walker, as a result of the work carried out by him and his colleagues on a series of 246 patients at the Cushing General Hospital. Comprehensive history and examination forms, with a special section for aphasia and related disturbances, together with suggestions for a social history and occupational counselling, have been drawn up and submitted in Appendix C. These involved a lot of meticulous recordings, but made possible an accurate assessment and a worthwhile evaluation of each case. The electroencephalograms of these patients are compared with a control series of electroencephalograms from patients with head injuries and no epilepsy, and the important conclusion is reached that "the electroencephalogram is not an adequate indicator or prognosticator of the convulsive state in cases of penetrating brain wounds". The chapter concludes with a good section on electrocorticography and with a series of drawings showing the operative procedures advocated for the subpial removal of brain scars.

After a short chapter on the various types of speech disorders resulting from gunshot wounds of the head and neck, and classified under the imposing array of headings of dysphasia, dysarthria, dysphonia, dyslalia, dysphemia, dyslogia and dysaudia, there is a final chapter on "clinico-pathological aspects of fatal missile-caused cranio-cerebral injuries", containing an analysis of 24 cases in which death resulted from head wounds, in 10 without operation and in 14 after surgical treatment. Detailed histories with operative and post-mortem findings are given in full, and it is significant to note that in over 75% of cases, these injuries had penetrated to the ventricular system. Another interesting feature was the finding of "discontinuous" fractures at the base of the skull some distance from the initial site of injury, and ready to admit organisms or air. The histopathology of the injured brains is well demonstrated in a series of 48 beautiful photomicrographs, some with magnification up to 1000.

The volume concludes with four appendices; A and C have been mentioned already. Appendix B has extracts from the "Manual of Therapy, European Theatre of Operations", laying down principles for the primary and definite surgical treatment of all wounds of the central and peripheral nervous system, whilst Appendix D contains statistical data concerning all casualties with battle wounds and battle injuries of the head and brain admitted to hospital under the headings of "Killed in Action", "Admissions and Discharges". The book is printed on glossy paper and set in very clear type. The binding is excellent and should last well. Its content should be studied carefully by all neurosurgeons, and by those general surgeons who may have to take care of patients with wounds of any part of the nervous system in battle or in civil life.

NEW VIEWS ON HÆMOPHILIA.

IT was to be expected that the recent unravelling of the complicated chain of reactions which determine the coagulation of blood should affect the hypotheses put forward regarding hæmophilia. An admirable exposition of the modern position is given by Wolfgang Lehmann, of Kiel, in the report on genetic hæmatology presented in a publication officially Italian, but commendably polyglot.[1] Some of the leading points may here be offered.

The condition arising from the absence or severe reduction of factor VIII is now termed hæmophilia A, whilst that caused by absence or reduction of factor IX is called hæmophilia B. This refinement is more academic than practical, for the two are clinically and genetically identical. The extensive literature of hæmophilia contains accounts of epistaxis, menorrhagia and delayed clotting in the female transmitter; but these are abnormalities. Natural selection is not operative in eliminating hæmophilia, as the increased death rate of males is balanced by the increased fertility of females. Children born from the mating of transmitter wife and hæmophilic husband have been supposed to be unable to survive this "double dose"; but some cases of female "bleeders" with this genetic background have been reported.

Other factors than VIII and IX can, through their loss or reduction, produce bleeding. Thus plasma-thrombokinase precursor, designated in some literature as PTA, is implicated in a bleeding diathesis which shows departure from the hæmophilic syndrome; bleeding into joints is rare, the retardation of clotting is moderate and both sexes are equally affected.

Of particular interest is the diathesis arising from reduction of the Stuart-Prower factor. In this rather rare condition, the hæmorrhage may be manifest shortly after birth and may be of fatal intensity; but a wide range of conditions has been described, in some of which a mild reduction of the Stuart-Prower factor is not associated with any observable disadvantage. This diathesis can occur in both sexes and the parents are usually consanguineous.

Other hæmophilic entities are bound to be described as methods for detecting and estimating the several precursors in the clotting of blood are elaborated, and it is to be hoped that the efforts now being made to bring international unity into the formidable nomenclature will be successful.

[1] "Symposium Geneticæ Hæmatologicæ"; 1959. Rome: Acta Geneticæ Medicæ et Gemellologiæ. 10¼" × 7¼", pp. 178, with illustrations. Price not stated.

Abstracts from Medical Literature.

DERMATOLOGY.

The Treatment of Scleroderma with Edathamil.

S. A. MULLER, L. A. BRUNSTING AND R. K. WINKELMANN (*A.M.A. Arch. Derm.*, August, 1959) discuss the treatment of scleroderma with edathamil disodium, the disodium salt of ethylenediaminetetra-acetic acid, a potent chelating agent, and review the literature. They consider edathamil most useful in cases of acrosclerosis of severe degree, though in no case was the drug curative. They state that the known and unknown effects of this potent chelating agent appear to disqualify it from use against the benign cutaneous forms of scleroderma. At present intravenous administration of the drug is considered the only method feasible. The authors state that Foreman and his associates have recommended a dosage of 50 mg. of edathamil per kilogram of body weight daily for five days followed by a two-day rest period before repetition of the dose, with a maximum daily dose for any patient of five grammes; the authors' usual daily dose is three grammes. The drug is dissolved in 500 ml. of a 50% solution of dextrose in water or isotonic saline and given intravenously in about four hours. In the authors' experience edathamil is a relatively safe drug to administer by this method. Some degree of renal irritation should be anticipated, although at the dosage schedules recommended by Foreman and associates it should be infrequent.

Bullous Dermatitis and Bullous Pemphigoid.

W. FRAIN-BELL (*Brit. J. Derm.*, July, 1959) states that the lesions of bullous pemphigoid may remain in one area of the skin for a variable period of time before spreading to affect the classical sites, and may be associated with other morphological changes closely simulating and often indistinguishable from those seen in eczema and in various "erythemata". He states that in 1954 Hellier drew attention to the fact that some cases of pemphigus show subepidermal bullæ. The author records another variety of bullous eruption seen most commonly in elderly patients. This usually affects the lower limbs and is associated with localized or widespread eczema. Six examples of the condition are reported.

Erythromycin in the Treatment of Early Syphilis.

C. K. MONTGOMERY AND J. M. KNOX (*A.M.A. Arch. Derm.*, August, 1959) report the results of treatment of 40 cases of early syphilis with a total dosage of 9 to 10 grammes of erythromycin ethyl succinate administered orally. The time-dosage schedules employed were as follows: 250 mg. four times a day for 10 days, 500 mg. four times a day for five days, and 750 mg. four times a day for three days. When possible dark-field examinations were made daily until the result was negative on two consecutive days. Serum serological tests were done monthly for one year. Spinal fluid cell counts and serological tests were carried out at the end of a year's follow-up. A dosage of 250 mg. given orally four times a day for 10 days resulted in two treatment failures among 21 patients followed for a minimum of three months; 500 mg. given orally four times a day for five days resulted in treatment failures in four out of 10 patients; 750 mg. given orally four times a day for three days resulted in treatment failures in six out of seven patients. Two patients treated with 200 mg. of erythromycin administered intramuscularly in single daily injections for 10 days have been followed for five months without evidence of relapse or reinfection.

Pyoderma Gangrenosum with an Abnormal Plasma Protein.

F. G. BOLTON *et alii* (*Brit. J. Derm.*, May, 1959) report a case of pyoderma gangrenosum without associated disease in which investigation showed curious clumping of the blood cells and an abnormal plasma protein. Examination of the urine, blood Wassermann and Kahn reactions, skiagram of chest and repeated examinations of the stools for occult blood showed no abnormality. The erythrocyte sedimentation rate (Wintrobe) was 23 and 41 mm. per hour. Hæmoglobin values varied between 14·8 and 8·0 grammes per 100 ml. The serum protein level was 6·85 grammes per 100 ml. (albumin 4·0 grammes, globulin 2·5 grammes). Numerous cultures demonstrated various flora, strains of *Staphylococcus aureus* being predominant. When blood leucocyte counts were attempted it was noticed that the cells clumped on the counting chamber, rendering the count difficult or impossible. This was probably due to a cryoglobulin in the patient's plasma.

Bowen's Disease and Systemic Cancer.

J. H. GRAHAM AND E. S. HELWIG (*A.M.A. Arch. Derm.*, August, 1959) discuss the association of Bowen's disease of the skin with internal and cutaneous cancer. Thirty-five patients with Bowen's disease, who either came to autopsy or died after surgical-pathological examination of internal organs, were studied. Anatomically, the lesions were single or multiple and occurred on both exposed and unexposed areas of the body. Twenty-eight of the 35 patients were observed to have one or more primary internal cancers, or primary cancer of the skin with metastases, at an average of 8·5 years after the onset of Bowen's disease. It is suggested that Bowen's disease of the skin associated with internal and cutaneous cancer may be a cutaneous manifestation of a systemic carcinogenic disease process.

Trauma and Squamous Skin Cancer.

A. W. GARDNER (*Lancet*, April 11, 1959) describes three cases in which a squamous epithelioma, proved histologically, developed within weeks of a traumatic accident. If trauma is presumed to be a causal factor in the production of cancer, the following criteria, which were first stated by Ewing, must be demonstrated: (i) the authenticity and adequacy of the trauma, (ii) the previous integrity of the injured part, (iii) the origin of the tumour at the point of injury, (iv) the occurrence of a reasonable interval between the injury and the appearance of the tumour, (v) the positive diagnosis of the presence and nature of the tumour. The author states that these three cases appear to satisfy Ewing's criteria. In two cases the injury was a prick, and in one case asbestos implantation may have occurred. The role of trauma in the production of squamous skin cancer is probably that of a carcinogenic stimulus. The author quotes Mackee and Cipollaro, who call attention to the frequency with which burn scars are followed by skin cancer.

ORTHOPÆDICS.

Internal Fixation of Fractures in the Forearms.

J. E. M. SMITH (*J. Bone Jt Surg.*, February, 1959) reviews 130 fractures in the forearm in 112 adults which were treated by open operation. These occurred in a period of six years. It is noted that this amounts to an average of three fractures per year requiring open reduction for each surgeon involved. Most of these cases were the results of traffic accidents, although some of the worst of them were industrial accidents. The type of fracture which required open reduction was usually a fracture of both bones of the forearm at the junction of the middle and lower thirds. This was often associated with dislocation or disorder of the inferior radio-ulnar joint. The author indicates his belief that conservative management of this type of fracture gives better results when possible. However, these fractures of the forearm are often slow to join, and slipping of the fracture can occur when it is splinted after conservative reduction. He refers the reader to a report by Evans in 1951, where the results of conservative treatment are described. The method of fixation which appeared to be best in this series was plating. In most cases both bones were plated. The author is not happy about the use of intermedullary fixation. On a few occasions primary bone grafting was performed. The most serious complication evident when the results of this series are studied is non-union or slow union. In 74 out of 102 cases good results were obtained, but 17 showed evidence of slow-union or non-union. The author states that the incidence of non-union can be greatly reduced if operation is delayed for at least one week, and preferably two to three weeks after the injury. Evidence is presented to support the value of delayed operation in the promotion of union of fractures. It is noted that it was important to mobilize the limb in plaster after the operation.

Lumbo-Sacral Interbody Spinal Fusion.

G. F. DOMMISSE (*J. Bone Jt Surg.*, February, 1959) describes a new operation for lumbo-sacral fusion in which he approaches the intervertebral disk through the lateral mass of the sacrum. He points out that shearing strain is an important factor in causing complete

absorption of the graft. He avoids this particular strain, particularly in spondylolisthesis, by cutting the bed for the graft horizontally. Two grafts are inserted in the antero-medial direction so as to converge on the centre of the anterior surface of the vertebral body. His operative technique and special tools used for the procedure are described. The results in this series have been carefully followed. It is noted that in about 40% of the patients there was a failure to fuse, although most of these were in the earlier group. Retropulsion of the grafts occurred in three patients. There were two cases of footdrop, one of sepsis, and no death. It is also noted that in one case of spondylolisthesis, following interbody fusion, there was evidence of fusion of the defect in the pars interarticularis. The author notes that this appears to be the first evidence that this may occur, and comments that it suggests that the defect is of the nature of a stress fracture.

Osteotomy of the Calcaneum for Pes Cavus.

F. C. DWYER (*J. Bone Jt Surg.*, February, 1959) describes his five years' experience with an operation for the treatment of idiopathic or neurological pes cavus. His patients had forefoot-drop deformity and contracted plantar fascia. The toes were clawed and there were callosities on the underside of the foot. There were also varus or valgus deformities of the heel and forefoot. He discusses the other classical operations for this deformity, particularly the Steindler, the Lambrinudi and the operation described by Todd. He considers that these operations give disappointing results in the well developed deformities found in adults. He describes his operation, which is a wedge osteotomy of the os calcis. He states that he has obtained good results, but has had to repeat the operation in a few cases.

Surgery in the Treatment of Low Back Pain and Sciatica.

F. C. REYNOLDS *et alii* (*J. Bone Jt Surg.*, March, 1959) present an analysis of 115 patients subjected to surgery for low back pain and sciatica, who returned for further clinical and radiological examination. A previous analysis of 450 cases showed that there had been 82% of good immediate results, 7% fair, 11% poor. The return of these patients, previously classified as good, with recurrence of disability, led the authors to perform this further analysis. In this careful analysis the cases were grouped under the headings of excellent, good, fair and poor. Excellent meant that a patient must be able to return to his former occupation, remain completely free of pain, and have no significant neurological fault; good, that he could return to work, suffer episodes of pain, but have no significant neurological fault; fair, that the patient must have returned to work and suffered pain in the back or legs from time to time and may have short episodes requiring bed rest and there may be evidence on examination of weakness, sensory loss or atrophy of mild degree. All other results were classified as poor. Judged by these criteria of grading, the results in 12 cases were classified as excellent, in 32 as good, in 26 as fair, and in 45 as poor. During this careful statistical analysis the authors investigated a number of questions. Significant findings were that patients with good evidence of nerve root compression obtained better results. In women the majority of disk lesions were found to be located at the fourth lumbar intervertebral space. Some 28 patients probably should not have had the operation. A number of these had obtained excellent results despite the unnecessary surgery.

Resolving Scoliosis.

J. C. SCOTT (*J. Bone Jt Surg.*, February, 1959) describes four cases of scoliosis of the idiopathic type which apparently went on to a natural cure. He points out that such cases could lead to further understanding of this difficult problem. He notes that the usual mechanical concept points to a vicious circle concept of scoliosis which would lead to a steady onward progress of the condition and that this concept is against the idea of any resolving change. He discusses the already understood condition of resolving infantile scoliosis; in a high proportion of infants with a definite lateral curve, the deformity resolved without treatment by the age of 18 months and none of these children had a measurable deformity at the age of two years. The four cases described fall into the infantile idiopathic group; the lesions might all have been expected to proceed to a severe deformity. The curve pattern was the same in all four cases. None of the patients was given any treatment which might be expected to affect the outcome. Repeated radiography was the most active step taken. The author states that speculation as to the corrective force and how it operates is of little value at this stage.

Bilateral Coraco-Clavicular Articulation.

L. J. RAY (*J. Bone Jt Surg.*, February, 1959) describes a case of bilateral coraco-clavicular articulation in the skeleton of an Australian aboriginal male; this abnormality was discovered in the course of a study of the clavicle of the Australian aboriginal, in which 292 clavicles were examined. The author refers to the literature on the subject. According to one recent survey only 54 cases of a coraco-clavicular joint in man have been recorded, most of these having been discovered accidentally, either at necropsy or during radiological examination. The condition is probably usually symptomless, but the joint may be subject to any of the various pathological conditions which affect any other joints, and the author suggests that the possible existence of this abnormal joint should be borne in mind in cases of shoulder pain or limitation of shoulder movement in which the cause is obscure.

SURGERY.

Appendicectomy During Right Inguinal Herniorrhaphy.

B. EISEMAN, W. G. FOWLER AND R. M. ROBINSON (*Ann. Surg.*, January, 1959) discuss the advisability of incidental appendicectomy at the time of right inguinal herniorrhaphy. In a consecutive series of 429 inguinal herniorrhaphies simultaneous appendicectomy was performed through the hernial sac, where there were no medical contraindications to the combined procedure and when the appendix could be exposed in its entirety without enlarging the routine herniorrhaphy incision. Prophylactic post-operative penicillin and streptomycin were administered for four days. Appendicectomy was possible in 73 of 146 cases of right herniorrhaphy in which the appendix was sought. The recurrence and complication rates were no greater in the cases in which appendicectomy was performed than in the control groups. The authors conclude that appendicectomy at the time of right inguinal herniorrhaphy is indicated provided that the entire appendix can be delivered into the unenlarged herniorrhaphy wound and that prophylactic post-operative antibiotic therapy is employed.

Tetralogy of Fallot.

J. H. KAY *et alii* (*J. Amer. med. Ass.*, July 13, 1959) report a series of 10 patients in whom complete correction of the tetralogy of Fallot has been effected by open heart surgery with the use of a heart-lung machine capable of oxygenating and delivering more than five litres of blood per minute. They point out that reports on earlier techniques employing palliative procedures such as the Blalock procedure and the Potts procedure have been published as recently as 1958, with an operative mortality in one series of 9%. In 1956 Lillehei and his colleagues reported a series of 29 patients operated on by open-heart surgery for the tetralogy of Fallot; there were nine deaths. In the authors' series the ages of the patients ranged from two and a half to 32 years; all had severe disability. There was one operative death, but the other nine patients all showed a striking improvement after their operation. One patient, aged 32 years and formerly bedridden, now does her own housework and works as a saleswoman. Details of the anæsthetic and surgical procedures employed are given. The authors anticipate a further reduction in the operative mortality.

A New Type of Stretcher for the Severely Injured.

J. ZAGDOUN (*Presse méd.*, April 4, 1959) describes a stretcher for the transport of severely injured persons, designed to avoid movement of the patient as far as possible. Once settled on the stretcher, he can be radiographically examined, have his wounds dressed and even be operated on without being moved from it. The stretcher consists of a frame of tubular "Duralumin" covered with plastic material that is completely transparent to X rays. The four wheels are equipped with springs, and the stretcher is covered with a mattress of nylon foam, also transparent to X rays. The width between the wheels makes it possible to place the stretcher with equal ease on its trolley and on the operating table. An ambulance equipped with these stretchers leaves them with the patients at the hospital, and takes away others; thus four stretchers are required for every two-stretcher ambulance. The author states that the stretcher has already given excellent service.

British Medical Association.

NEW SOUTH WALES BRANCH: PARAPLEGIC SURVEY.

IN the latter part of 1957, the Council of the New South Wales Branch of the British Medical Association decided to conduct a survey of persons suffering from paraplegia in the state of New South Wales.

The object of the survey was to obtain information concerning the number of persons so affected and the problems involved in caring for them, with a view to estimating the number of beds required in one or more paraplegic centres and paraplegic hostels.

Procedure.

The procedure adopted to obtain the information was as follows: (*a*) the publication in a number of issues of the *Monthly Bulletin* of a memorandum requesting members of the medical profession to forward, with their patients' permission, the names of patients suffering from this condition under their care; (*b*) the sending of letters to the superintendents of the various city and base hospitals, requesting the names and addresses of all the paraplegics in their respective hospitals or attending at their outpatient departments and rehabilitation centres; (*c*) the sending to those patients whose names had been obtained of a *questionnaire* on a punched card with explanatory notes[1] and a prepaid envelope for a reply.

Analysis of Results.

Eighty *questionnaire* were sent out, but only 54 completed replies were received (for comments, see below). Almost all the patients were either in hospital or able to give the name of the local doctor looking after them.

Sex and Marital Status.

There were 40 males and 14 females. Thirty-one were single (five females and 26 males), and 23 had marital status (nine females and 14 males). Of these nine females, six were married, one was a widow and one was divorced; the status of the other was not stated. Of the 14 males, there were 11 married and three divorced or living apart from their wives.

Ages.

The numbers in the various age groups (in decades) were as follows:

	Number.
10 to 19 years	3
20 to 29 years	21
30 to 39 years	9
40 to 49 years	8
50 to 59 years	7
60 to 69 years	3
Not stated	3

Domicile.

Thirty-one patients lived in metropolitan areas and 23 in country areas.

Pension Categories.

Information with regard to pension categories was obtained from only 34 patients. Relevant data concerning the remainder were not forthcoming. The various groups were as follows: invalid pensions, 19; workers' compensation, six; third-party claims, nine.

Ætiology.

The ætiological factors were as follows:

Trauma (32 cases):	
Motor-car accidents	14
Diving into shallow water	4
Fall from height	4
Crush by fall or rock or earth	2
Gunshot wounds	2
War service (unspecified)	1
Fall from horse	1
Stab wound	1
Unspecified	3
Disease (12 cases):	
Disseminated sclerosis	3
Transverse myelitis	2
Pott's disease	2
Epidural abscess	1
Unspecified	4

In the remaining 10 cases the ætiology was not given.

Level of Lesion.

The following conclusions relating to the levels of the lesions are only as accurate as deductions based on present levels of anæsthesia can be: lower cervical, six cases; midthoracic, seven cases; lumbar, 29 cases. In the remaining cases, the level of the lesion could not be determined.

Mobility.

Twenty-nine subjects indicated that they were unable to walk with crutches; this number includes those with "high level" lesions. Several were bed-bound or chair-bound, and for this condition such features as older age or associated disabilities (e.g., of the hands) were responsible.

Bed-Sores.

Eighteen subjects admitted the existence of one (or more) open unhealed bed sores. All these appeared to be in need of expert attention.

General Health.

Thirty-four subjects felt well and had no general symptoms. Twenty did not feel well, owing to recurrent bouts of fever and various pains. Of these 20, only seven had bed sores. All the 20 are presumably in need of continuing medical or surgical attention.

Employment.

From the point of view of employment, the 54 patients could be grouped as follows: Fifteen were employed, and three were attending a sheltered workshop (Civilian Maimed and Limbless Association). Of the 36 unemployed, there were nine who were deemed employable. This opinion is based upon such factors as age of leaving school and educational standard reached, social factors, relative mobility and state of health. Twenty-seven were deemed not employable.

A small but significant proportion of this group would be able to work in sheltered workshops if these were available and if suitable transport was supplied.

The figures given by Ludwig Guttmann (1953) from Stoke Mandeville and by G. M. Bedbrook (1959) from the Perth Paraplegic Unit show that, excluding the older age groups, with early adequate treatment and training the percentage of employable paraplegics should be from 70 to 80.

Longevity.

The majority of patients in this survey had sustained their paraplegia within the last 5 years. However, there were rare exceptions in which the subjects had survived for 30 and 20 years.

In a review of autopsies, Dietrich and Russi (1958) found an average longevity of 43·6 months after the onset of paraplegia, and an average of 52·8 months for those patients with traumatic paraplegia who did not die immediately after the injury. The causes of death in the American review of autopsy findings indicated the need for the prevention of chronic infections and bed sores. An editorial summary of this review hazarded the opinion that the person who becomes a paraplegic today has a better life expectancy than the paraplegic of 10 years ago. As a corollary, adequate and continuing medical care must then be provided for a greater number of paraplegics than 10 years ago.

Special Survey of Paraplegics in Hospital in New South Wales.

In the early part of May, a communication was addressed to a large number of hospitals in New South Wales, seeking the number of paraplegics (and quadriplegics) in each hospital on May 5, 1959. The letter elicited the figures shown in Table I.

These figures show a better response than that obtained from the original *questionnaire* sent to patients.

Comment.

The results of the survey depended upon (1) the response of readers of the *Monthly Bulletin* of the New South Wales

[1] Copies of this *questionnaire* may be obtained on application to the New South Wales Branch of the British Medical Association.

Branch of the British Medical Association, and thereafter (ii) the response of individual patients.

Direct access to patients' hospital and medical records could not be obtained without each patient's authority. A more vigorous campaign, which would require more personal efforts and more expense, would no doubt be correspondingly more successful. Visits to individual patients would probably be necessary. Thus, this survey cannot be considered more than a pilot one. The figures indicate trends only, and not the absolute state of affairs.

TABLE I.

Sex.	Para-plegics.	Quadri-plegics.	Total.
Male	36	20	56
Female	27	3	30
Total ..	63	23	86

Despite the above-mentioned shortcoming, some salient facts have been elicited, and the following important conclusions arrived at:

1. A significantly large percentage of paraplegics are in need of expert follow-up care and attention from a modern paraplegic unit.

2. Only approximately one-quarter of the paraplegics of this survey are in employment, and a further one-fifth may be considered employable, a potential total of about 50%. Perhaps a further one-tenth or more would be capable of work in suitable sheltered workshops. These figures suffer greatly in comparison with the figures concerning employment from recognized paraplegic centres elsewhere.

3. Some form of physical help within the home and of financial help for nursing and for the purchase of pharmaceuticals and equipment appears to be necessary for the majority of paraplegics, whether employed or unemployed.

4. Approximately three-quarters of the group of 54 were between the ages of 20 and 50 years, with the maximum incidence in the younger half of this age span. It is within this group that the greatest success can be anticipated in return to employment, but only if adequate treatment is available early and thereafter (Guttmann, 1933; Bedbrook, 1959). Included in the survey were tragic instances in which such treatment had obviously been unavailable, and avoidable medical complications had occurred.

5. A review of ætiology reveals that a significant percentage of paraplegia due to trauma is theoretically preventible—for example, by safety harness for motor-car drivers and passengers, by water-safety education in schools, etc. In a small proportion of instances of paraplegia due to trauma, mental ill health was a factor which precipitated the particular trauma.

6. Existing facilities for the over-all treatment and after-care of patients with paraplegia are inadequate. The needs of a growing number of patients will have to be satisfied.

Summary.

A pilot survey of paraplegics in New South Wales has been carried out. It was not sufficiently supported or forceful to be as successful as such a survey needs to be. Nevertheless, the following firm conclusions could be drawn:

1. A significant percentage of accidents causing paraplegia are preventible.

2. If adequately treated early, and thereafter followed up for life, 70% to 80% of paraplegics in the young and middle-aged groups are employable.

3. There is a need in the State of New South Wales for at least one modern fifty-bed paraplegic unit, situated in Sydney and associated with a teaching hospital, to satisfy present and future needs in treatment, teaching and research.

Acknowledgements.

The Council of the New South Wales Branch of the British Medical Association desires to express its great appreciation of the help given by Dr. R. I. Meyers and Dr. R. A. Money in the carrying out of the survey.

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On the Periphery.

PETER PAN IN INDUSTRY.

HE was 97, an alert, spry, active little elf, about to be investigated for hæmaturia. At the question "Have you ever, even as a little boy, had any serious illnesses?" he thought very carefully, then replied: "No, but some years ago, when I was 84, the doctor at the works tried to have me sacked 'cos my ankles swelled a bit, but I stayed on."

Out of the Past.

In this column will be published from time to time extracts, taken from medical journals, newspapers, official and historical records, diaries and so on, dealing with events connected with the early medical history of Australia.

PUBLIC HEALTH.[1]

[From the *Australasian Medical Gazette*, January 20, 1897.]

THE births of 995 children, viz., 508 boys and 487 girls, were registered in Greater Melbourne during the month of November. The number was 68 lower than in the corresponding month of the previous year, also by far the lowest recorded for the month during the last 11 years. The deaths registered in November numbered 590, viz., 322 of males and 268 of females; the births thus exceeded the deaths by 405 or 69 per cent. The deaths were more by 33 than in the corresponding month of the previous year. To every 1000 of the population of the district the proportion of births registered was equivalent to 26·84 and of deaths registered 15·92 per annum, as compared with averages for the same month during the past ten years of 35·06 and 18·46 respectively, and averages for the whole year of 35·22 and 18·88. Thus it is evident that either the birth and death rates during the month were exceptionally low or else that the population has fallen off considerably since 31st December last, when the last estimate was made. Males contributed 55 per cent., and females 45 per cent., to the mortality of the month. Children under 5 years of age contributed 36 per cent. to that mortality as against 33 per cent. in November 1895. 126 deaths (21 per cent.) took place in public institutions. The deaths of children under 5 years numbered 215, of which 118, or 55 per cent., were males, and 97 or 45 per cent., were females. The principal causes of death were diphtheria 6; typhoid fever 5; cancer 28; phthisis 73; apoplexy 13; pneumonia 23; bronchitis 11; pleurisy 10; enteritis 82.

Correspondence.

A CENTENARY: ROBERT SCOT SKIRVING.

SIR: In your issue of September 1, 1956, you published a letter from P. E. Walton Smith, calling attention to the fact that July 31 of that year was the centenary of the birth of Sir Alexander MacCormick. It seems to me fitting that the centenary of the birth of his life-long friend, Dr. Robert Scot Skirving, should not pass unnoticed.

Robert Scot Skirving was born on December 18, 1859, and died on July 15, 1956. He is still too well remembered by

[1] From the original in the Mitchell Library, Sydney.

a large circle of friends of all generations for it to be necessary to do more than call attention to the fact. Those who are interested will find a full account of his long, eventful and useful life in the issue of the Journal of November 10, 1956.

Yours, etc.,

Sydney. *Arma virumque cano.*
December 3, 1959.

THE CASE AGAINST TONSILLECTOMY.

SIR: Your correspondents on the subject of "The Case Against Tonsillectomy" imply that more information should be forthcoming on evidence of good results from tonsillectomy, and on the indications for tonsillectomy.

These two matters are complementary. Good results can only be obtained if the indications used in advising treatment are sound. This is why tonsillectomy can still be the commonest operation and can frequently be performed unnecessarily whilst cases badly needing such treatment are denied it. I have no doubt that most of the "anti-tonsillectomists" are those who see a large number of cases that have been so treated unnecessarily, either because of concomitant disease also requiring treatment, or because, unfortunately, of unsound indications. As I said in a letter to you as long ago as September 25, 1926, the indications then were empirical, unscientific and (compared with many branches of modern medicine) deplorably unsatisfactory. This condition, unfortunately, still obtains. However, in the hands of those who have access to practical experience, and who have the eyes to see, they have proved reasonably satisfactory.

Practical experience is essential. It is impossible for any person to master such a subject by reading alone; just as impossible, I would say, as it would be for me to become an artist by correspondence.

Because of the impossibility of producing maestros by post, most ear, nose and throat surgeons shirk the responsibility of trying to pass on (when challenged in your Journal from time to time to do so) what information on the subject they could. And, because this information cannot be expressed fully or in precise scientific terms, who can blame us if we keep quiet?

In the letter referred to, I (rather bravely, I thought) gave an outline of indications for tonsillectomy, and it is surprising how little my views have altered since. As there seems a real desire on the part of your present correspondents for a current expression of opinion on this matter, I will, as well as I can do so shortly, try to put into words my ideas of the indications for removal of tonsils for non-malignant disease.

1. Where there has been more than one peritonsillar abscess. Such patients are mostly adults whose tonsils' work is more or less done, and further recurrences are to be expected. These patients subsequently look back on the operation as a minor procedure compared with the severe pain and discomfort of a quinsy.

2. Where tonsils cause chronic respiratory obstruction. Though adenoid obstruction is far commoner, this does occur, and needs treatment.

3. Where children are over the age of four, and adenoidectomy is indicated, and when the tonsils show signs of disease or are moderately enlarged. This advice is given because of the frequency with which tonsillectomy becomes necessary subsequently to adenoidectomy alone. Under the age of four, removal of lymphoid tissue seems to stimulate the growth of residual lymphoid tissue, as shown, for instance, by the frequency of recurrences of enlarged adenoids when removed under that age.

4. Where the tonsils are under suspicion (e.g., a combination of some or all of such symptoms and signs as enlargement, expressible debris, repeated acute tonsillitis, or a persistent adjacent red pillar zone) combined with chronic enlargement of the tonsillar upper cervical lymph glands and ill-health.

5. Cases of acute or chronic catarrhal or suppurative otitis media or of catarrhal Eustachian obstruction, with latent intervals of no aural trouble (suggesting there is no actual focus of infection in the middle ear or mastoid), where recurrence of the aural infection is found frequently to follow exacerbations of tonsillitis.

6. Cases of persistently recurrent sore throats where the infection obviously involves chiefly the tonsils, accompanied by enough discomfort or general symptoms to make removal a fair exchange from the patient's point of view.

7. Cachosmia of tonsillar origin, where the patient identifies the taste or smell of expressed debris as that of which he complains, and where the patient is willing to submit to operation to obtain relief. A full examination for dental cavities, atrophic rhinitis should be made at the same time, to avoid overlooking multiple causes.

8. This is a miscellaneous and relatively unsatisfactory group, where the patient suffers from diseases often caused by focal sepsis. A full examination is necessary to exclude other possible causes of ill health, or other areas of focal sepsis. In children, the syndrome is fairly typical, consisting of nasal obstruction and recurrent sore throats, coupled with lack of energy, loss of appetite, cessation or slowing of growth, sleeplessness, bed-wetting, headaches, etc. In the adult, we have various anæmias, fibrositis, rheumatoid arthritis, erythema nodosum, other skin diseases, some cases of hyperthyroidism, etc. Results in treatment of this group are closely related to the experience and *nous* of the practitioner, and his views of how seldom or often treatment might prove experimental.

Though tonsillectomy, where tonsils appear normal, may occasionally cure symptoms so satisfactorily that there can be little doubt that there had been latent infections between attacks, I cannot overstress the rule: "Whenever in doubt about tonsillectomy, watch the tonsils over a prolonged period." The practice of removing tonsils because of a few uncomplicated attacks of tonsillitis is unjustifiable.

A large proportion of "failures" are due to overlooking concomitant diseases. Obviously, cases of asthma, allergic rhinitis, etc., will not receive relief from symptoms due to these complaints by tonsillectomy, except in a relatively small group where the allergy was due to sensitivity to tonsillar organisms; yet many healthy tonsils have been slaughtered on this altar. Similarly, purulent sinusitis will not benefit from removal of tonsils alone.

Tonsils should never be removed from professional singers or cleft palate cases except by persons who have had special experience of such work.

One correspondent complains that tonsils grow again after removal. This, of course, is a sign of the bad surgeon or the impossible anæsthetist. However, peritonsillar abscess can occur in scars of previous abscesses even after tonsillectomy, but this does not happen if one removes also any scar tissue found in the tonsil beds of these cases.

Yours, etc.,

223 Macquarie Street, A. B. K. WATKINS.
Sydney.
November 30, 1959.

COMMON NONSENSE UNLIMITED INCORPORATED.

SIR: It is with some concern that I am writing this letter to draw the attention of the members of our profession to a symptom which, if not curbed, can further grow to much more worrying dimensions. I assume that it must have been observed not only by myself, but as well by others.

The recent advent of television and its use by various bodies for their own ends and for propaganda purposes in a variety of fields is a factor one has to accept in the modern life of any community. However, harm can be done, and possibly irreversible harm, when not only politicians take "the rostrum" in television sessions, but members of our profession. It would be not much wrong in doing so if some of them would limit their appearances to entertainment value. If that suits them and their outlook and they would be clearly introduced to the listeners and/or viewers as such, then one possibly would not have objections. After all, not every time can Danny Kaye or chorus or ballet be entertaining the viewing public. Unfortunately, this is not meant by some of the professional participants of such sessions when they pronounce very seriously some views which could impress comically, if not that they rather become tragic because of the effect which they could have on the lay public.

One feature of those psychological sessions is that usually the speaker remains "anonymous" as Dr. or Mr. X. It is ridiculously childish in itself, and harmless enough but for the psychological nonsense dogmatically pronounced by the Mr. or Dr. X. They have insufficient clinical evidence to express their pseudo-scientific conclusions, and to present them as resulting from special research and studies as it was aimed during such telecasts. I feel that the time comes when some halt should be made to it before it becomes uncontrollable. It is already embarrassing enough. May I be permitted to mention, for instance, some aspect of driving. It would seem that a driver of

a car is inattentive to the road rules and the traffic often not because of his nagging wife (as blamed for many sins uncommitted—*vide*, proverbially and symbolically, Socrates' Xanthippe), but probably more so because of, e.g., high expenses of the upkeep of "his" car, which is beyond his means when bought on "hire purchase". Similarly other factors could be more contributing to an accident than a variety of "causes" which are blamed, such as "personality type", etc. After all, no psychiatrist would claim that a personality type can be changed to any degree by a simple manner of reorientation. It is much more complicated than that. Further, possibly faulty brakes or tyres too easily cleared for registration could be more important in causing collisions than "poor symbolic gesture speech" with which drivers allegedly are not equipped. It would be interested to know how many people who drive cars can afford them financially. There are many other aspects to which rather common sense should be applied—e.g., the bad eyesight in elderly drivers may be more responsible for an accident than their "accident proneness".

And what about the number of attempted suicides on the road?

If this is what is happening through "popularization" of psychiatry in similar programmes in the United States, then one has to be reminded that not everything that is done there is good and has to be repeated here, even if we do bring from the States the "Perry Mason" show, etc., which have entertainment value, but could be "criminal" should they turn seriously to expressing dogmatic views on crime detection and law.

I hope that this letter will be material for some reconsideration and thought to those who are overshowering us with their pseudo-didactic and pseudo-scientific teachings of their expert views.

Yours, etc.,

"Wyoming",
175 Macquarie Street,
Sydney.
November 20, 1959.

OSCAR R. SCHMALZBACH.

PHENYLBUTAZONE AND PENSIONER BENEFITS.

SIR: Referring to the report of the Federal Council meeting in the issue of November 14, page 735, it is stated that phenylbutazone was deleted from the Pensioner Medical Scheme "after careful consideration of the reports of leading international therapeutists".

I find my personal experience so much at variance from the conclusions implicit in that statement, that I must immediately assert that phenylbutazone is without any doubt in my mind the most useful single drug to be used in the treatment of osteoarthritis. I make this statement with the same conviction with which I would have endorsed penicillin three years ago, and which I now hold with regard to the broad-spectrum antibiotics, trinitrin and salicylates in relation to bacterial infection, angina and rheumatic fever respectively, without any knowledge of a statistical basis for these opinions.

I believe that the general practitioner, the rheumatologist and the orthopædic surgeon are in a better position to judge the effectiveness of this particular drug than other medical workers, and I believe ample support for the view I have expressed will be forthcoming. Osteoarthritis being an incurable, almost inevitable, condition, cases do not readily find their way beyond the general practice as a rule, and even less since phenylbutazone became available.

Reference to phenylbutazone dispensed via the public hospitals and simple follow-up of results should put the problem in a practical, not theoretical, light. Clinical impressions are not fashionable these days, but nevertheless, like "spot diagnosis", they have stood the test of time.

Yours, etc.,

20 Whitehorse Road,
Ringwood,
Victoria.
November 24, 1959.

PAUL MATTHEWS.

THE STATE CANCER COUNCIL: BREAST CANCER SURVEY.

SIR: The New South Wales State Cancer Council has established a new project with the objective of carrying out a prolonged study of those families in New South Wales showing a high incidence of cancer of the breast. It is hoped to conduct this survey back over the last four generations, and it will be financed as a Research Fellowship of the British Tobacco Company Limited. A nursing sister with high qualifications in research of this nature has been appointed to commence duty on January 4, 1960.

Council would be grateful if the medical profession will assist this very important study by informing us of any families in their practices having a high incidence of breast cancer who would be prepared to cooperate.

Yours, etc.,

ALAN B. LILLEY,
Medical Director.

The New South Wales State Cancer Council,
Bridge Street,
Sydney.
November 24, 1959.

AMBULANCE DRIVERS AND ROAD SAFETY.

SIR: *The Sydney Morning Herald* of November 21 gives an account of a collision between an ambulance and a car, resulting in injuries to four men, one of whom died. Not only were the two ambulance men injured, but also their passenger, who, according to the *Herald*, had already been badly injured in another car accident. No details are given about how the accident occurred; but, if one may judge from what many of us have seen and deplored in the past, it is likely that the ambulance was ignoring traffic regulations as it sped along with siren sounding.

It is reasonable that a policeman on point duty should give precedence to an ambulance, but ambulance drivers should not be entitled to break the usual rules and endanger their passengers, themselves and other road users. It is rare indeed that "rushing" an ill or injured person to hospital is going to improve his prognosis. If he is conscious and alert, he may well have neurosis added to physical injuries or other illness.

I hope that support will be given to these recommendations: (i) Ambulance authorities should instruct their drivers to observe traffic rules. (ii) The police should be instructed to see that they do so. (iii) Any ambulance driver breaking the law should be prosecuted, as would the driver of any other vehicle.

Yours, etc.,

185 Macquarie Street,
Sydney.
November 21, 1959.

M. P. SUSMAN.

MEDICAL CARE IN AUSTRALIA.

SIR: Your editorial (November 14, 1959) rightly gave prominence to "uneasiness" about aspects of measures for medical care and pharmaceutical benefits, now being introduced in Parliament.

Other matters, to which it did not refer, may yet prove to be of more moment—e.g., that between the B.M.A. and the Repatriation Department on conditions of service for visiting medical staff; or that *re* the improbability of the Commonwealth Government's "moving into the area" of rehabilitation "in the near future". (Report of the meeting of the Federal Council of the B.M.A. in Australia, MED. J. AUST., November 14, page 738.)

Re the latter: "In Britain effective organised after-care was yet only in its infancy . . . and it badly needed development if the work of the hospital was not to be speedily undone." (Report of Annual Meeting of B.M.A., 1959, *Brit. med. J.*, 2: 565.)

Necessarily a great amount of effort has been devoted to initial and to new legislation *re* funds and pharmaceuticals, and to making the laws work. What attention is being given, and by whom, to less detailed matters, e.g.: (*a*) If 80% of certain readmissions to hospital reflect lack of cooperation or of understanding by the patient (*ibidem*, page 565), to what extent and in what manner can health education better contribute to lessen an unnecessary burden? (*b*) How can families of modest means be protected against the financial disaster of heavy medical costs, not at present catered for? (*c*) *Re* the Repatriation Department—is there not room for improvement in the conditions of repatriation medicine—if only by methods of our own devising that will embody the best from Britain and avoid the worst from America? Perhaps this will be the major task, and only *raison d'être*, of the Repatriation Central Medical Advisory Committee? (*d*) Should there be set up a non-discriminatory Rehabiliation (After-Care) Commission, to ascertain that the work of the hospital is

not "speedily undone"? (e) If there is something missing from the Australian medico-political scene, essential to better, more universal, less individually expensive medical care, is it a Federal Department of Health, Education and Welfare?

Perhaps a Royal Commission is needed so that these and other questions can be answered, to determine where we are going, how we should get there, and how much we can afford for the journey.

Yours, etc.

Tot homines, quot sententiæ.

Sydney.
November 22, 1959.

CANCER, A DISEASE OF THE NERVOUS SYSTEM.

SIR: This title must seem nonsensical to those trained in today's dictum that cancer, an autonomous growth, spreads by the dispersion of its own cells; that these cause illness by taking the nourishment which properly belongs to normal cells, and kill the patient through secondary infection or hæmorrhage. Yet nearly every patient with cancer presents facts which do not agree with this doctrine. Brain and Henson[1] reported 42 cancers which somehow caused central nervous damage like that which is seen in virus diseases. In the chick embryo a transplanted sarcoma can stimulate an excessive outgrowth of nerves which penetrate the tumour and are accompanied by extreme hypertrophy of adjacent sensory ganglia.[2] It is well known that all tumours, both human[3] and experimental,[4] have fine nerves from the spinal ganglia which supply the adjacent somatic tissues. In all vertebrates the finest nerves are submicroscopic, and are continually sprouting new branches which adjust themselves to changes in the tissues.[5] This is almost the sole autonomic supply.

R. A. Willis,[6] who denies the influence of nerves in tumours, has written: "Neither connective tissue cells nor proliferating fibroblasts possess a nerve supply." On this foundation he bases the further mistaken belief that nerve fibrils cannot grow fast enough to keep up with the rapidly dividing cancer cells. Yet in the growing antlers of the deer the nerves may grow at more than half an inch per day.[7]

Rudolf Virchow[8] said that every advance in medical science had to be preceded by an advance in knowledge of anatomy. But these later advances in the finer structure are rarely considered by pathologists, because they would necessitate too great a revolution of thought. Virchow's greatest error was his ranting against the "neuropathologists" who believed that nerves played a part in inflammation.[9] His attitude was born of his own ignorance of anatomy—his belief that nerves were absent from many tissues. Yet in 1877 Virchow[9] wrote: "The delicacy of the peripheral nerve network exceeds even the boldest speculations." But it was too late to repair the damage.

J. Murphy[10] has courageously shown how inadequate is the present teaching to explain the dissemination of a neuroblastoma. It would be foolish to think that cancer in every case is truly a disease of the nervous system. But the small minority with central nervous complications, for which as yet there is no explanation, may provide a clue. When the true solution is found it will provide explanations for all the manifestations of cancer, just as infection with a spirochæte explained all the manifestations of syphilis.

In discussions on cancer the specialist often sees part of the truth and is tempted to extend this to cover the whole. Cigarette smoking and the study of carcinogens cannot provide the solution, because many cancers occur without such stimuli. Statistics can give the right answers only if the right questions are asked. Cytochemistry and the study of D.N.A. can lead only to the concentration on more and more refined techniques; there is yet no way of determining if the nucleic acid of a tumour cell differs from that of a normal cell.[11] The finer structure of the nucleus is possibly as little related to the cause of malignancy as the atomic structure of iron is to the mechanism of the internal combustion engine.

For fifty years Peyton Rous,[12] supported by the late W. E. Gye,[13] has been saying that all the manifestations of cancer can be explained as the effects of a virus transmitted from cell to cell. His findings were accepted as applying only to birds. In recent years, however, five different kinds of mamma..an cancer have been transmitted by cell-free filtrates.[14]

The prospect is hopeful that the virus hypothesis will be accepted as a fact.[15] But the virologists who carry on the search will have to clear their minds of the pessimistic belief that the "secrets of cancer are locked up in the secrets of life itself".

Yours, etc.,

410 Albert Street,
East Melbourne,
Victoria.
November 26, 1959.

M. KELLY.

SIR: May I be permitted through your columns to ask your correspondent Brian G. Haynes (MED. J. AUST., November 14, 1959) whether he considers that the sweating, tachycardia, emotional disturbance, delirium and feelings of collapse which not infrequently precede an attack of pregnancy are convincing evidence that pregnancy is yet another manifestation of autonomic dyspraxia?

Yours, etc.,

44 Martin Place,
Sydney.
November 24, 1959.

ROY E. ARMATI.

MEDICAL MATTERS AND THE PRESS.

SIR: An old theory of Plato was popularized by Gall and Spurzheim, the phrenologists, and more or less accepted by Dr. Arthur Conan Doyle (I refer to Sir Arthur's story "A Study in Scarlet"). The theory was that the mind of man could (like a garbage-box) retain just so much and no more, i.e., new ideational complexes must necessarily displace something formerly stored in that mental attic, the human cranium.

This foolishly mechanistic view I should perhaps share, now that those gentlemen with loads of learned lumber in their heads, the almost oppressively numerous factual data of human anatomy, have demonstrated publicly their ignorance of the history of British medical ethics in this country. Apparently human heads can't contain both at once!

Douglas Miller (October 9, 1959) says: "A good wine needs no bush, so let us live according to the traditional British ethics of our fathers." Has he read any of the reputable newspapers of his father's day? They would shock him.

John L. Dowling (*ibidem*): "Surely, Sir, if the lay Press wished to publicize medical matters, it should do so in general terms, without bias and in a manner not resembling an advertisement". (But cf. the B.M.A.'s sponsoring a "Marriage Guidance" supplement to a weekly magazine—in my opinion a most undesirable intrusion into general practitioner psychiatry.)

W. Scott Charlton (*ibidem*): "It is not unfair to claim that much of the dignity and honour upon which mainly the prestige of the medical profession rests are derived from Briditish medicine and British medical manners." Rubbish.

The B.M.A. only in this century has succeeded in cleansing the lay Press of sordid, lying medical advertisements. (It is true that the law belatedly followed the B.M.A.'s ethical example, so that advertising such as our fathers carried on in the newspapers is now a legal offence.)

[1] *Lancet*, 1958, 2: 971 (November 8).
[2] Levi-Montcalcini, R. (1955), "Regeneration in the Nervous System", Thomas, Springfield: 54.
[3] Oertel, H. (1937), *Canad. med. Ass. J.*, 36: 401 (April).
[4] Shapiro, D. M., and Warner, S. (1949), *Cancer Res.*, 9: 707.
[5] Speidel, C. C. (1942), *Bull. N.Y. Acad. Med.*, 18: 625. (October).
[6] "The Spread of Tumours in the Human Body", 1952, 2nd Edition, Butterworth, London: 127.
[7] Wislocki, G. B., and Singer, M. (1946), *J. comp. Neurol.*, 85: 1 (August).
[8] "Cellular Pathology", 1858, translated by F. Chance, New Sydenham Society, London.
[9] Virchow, R. (1877), *Virchows Arch. path. Anat.*, translated by L. J. Rather, *Bull Hist. Med.*, 1956, 30: 436.
[10] MED. J. AUST., 1959, 2: 317 (September 5).
[11] Todd, A. (1959), *Brit. Med. J.*, 2: 517 (September 26).
[12] *Nature*, 1959, 183: 1357 (May 16).
[13] Editorial (1959), *Brit. med. J.*, 1: 531 (March 26).
[14] Editorial (1959), *Lancet*, 2: 277 (September 5).
[15] Stanley, W. M. (1958), *Ann. N.Y. Acad. Sci.*, 71: 1100 (September 30).

No, Dr. Miller, Dr. Dowling and Dr. Charlton, medical ethics in Australia have never been set at so high a standard. If my colleagues refer to the *Australian Star*, an evening newspaper in Sydney in 1899, they will find an advertisement for "the Fresh Food and Ice Company's humanised milk prepared under the supervision of Dr. (a well known figure)", and two-thirds of the advertising paid advertisements by doctors blaring ridiculous claims for themselves, their near infallibility and their (presumably) secret remedies. Going back a little further, the correspondence columns of *The Sydney Morning Herald* contained a spate of letters by Dr. G. H. Pringle, M.D., F.R.C.S. (E.), of the former Colonial Hospital, on the wonders of Listerism as practised by himself, and then an attack on his methods of medical treatment by J. M. Nolan, M.D. In fact, a few months after the Australian Medical Association was inaugurated one of its members published a paper on "Dysentery" at length in the Sydney Press. Not long afterwards one of the Councillors of the Association was matted for a similar offence, but he wriggled out of it.

The traditional ethics of our fathers, indeed!

Yours, etc.,

GODFREY HARRIS.

P.S. For the record, I do not write medical articles for the lay Press.

8 Young Street,
Sydney.
November 22, 1959.

EXPLOSIVE OR EPISODIC DISORDERS IN CHILDREN AS EPILEPTIC EQUIVALENTS.

SIR: Dr. N. McConaghy's remarks (Journal, November 14, 1959, page 740) on Dr. E. Davis's paper "Explosive or Episodic Disorders in Children as Epileptic Equivalents" (Journal, October 3, page 474) are interesting and pertinent. They illustrate the semantic and epistemological problems which are more prevalent than apparent in medicine.

Dr. Davis commences his article: "This paper is presented . . . as a personal expression of opinion in an endeavour to recognize such disorders as epileptic equivalents." Such endeavours are only justifiable so long as they do not revive semantic confusion which the writer, like Dr. McConaghy, hoped was being abandoned by neglect.

Spratling,[1] as long ago as 1904, discussed various objections to the term psychic epilepsy or "as some writers class attacks like these as psychic epileptic equivalents, a practice in which we do not agree", adding "it seems best so long as psychic epilepsy is a form of the disease complete in itself not to fix on it the character of simply being equal to or like something else". Gibbs and Stamps[2] wrote "the term epileptic equivalent has been used for this type of seizure, but the term psychomotor epilepsy is more precisely descriptive". Professor Gastaut states "the term psychomotor epilepsy comprises those cases of epilepsy in which psychosensory phenomena and coordinated motor activity predominate". These synonymously used terms are purely descriptive, and such seizures may occur in association with epileptogenic foci within or outside the temporal lobe (e.g., frontal lobe foci). It is confusing and unjustifiable to use the term psychomotor epilepsy as a "different entity" from psychic epilepsy, since by common usage no semantic distinction exists.

As Dr. Davis contends that "this special type of behaviour disorder is in fact an epileptic equivalent—a special form of epilepsy *per se* . . . ", it is to be presumed that the electroencephalographic records offered are regarded as indicating interictal abnormalities in patients with focal (temporal lobe) epilepsy. It is difficult to interpret them in this light. Unfortunately the channels are not numbered on the plan in Dr. Davis's illustrations, and the convention has to be surmised. If, for example, in Figure II it is assumed that bipolar A-P chains are used (first four channels right side, front to back) with channels 3 and 6 missing, then the record seems to show a (? bilateral) high-amplitude slow-wave disturbance, and not focal high-voltage spikes.

If, however, the records are regarded as not specifically epileptic, and few authorities would accept the abnormalities listed by Dr. Davis in his text as such, then there is no justification in making assumptions about causality by analogy.

[1] "Epilepsy and Its Treatment", 1904, Saunders, Philadelphia.
[2] "Epilepsy Handbook", 1958, Thomas, Springfield.

In a recent survey (to be published) carried out by the writer, of 72 patients with temporal lobe epilepsy, subjected to temporal lobectomy, a wide variety of psychiatric disturbances was seen. No significant correlation was demonstrable between type of personality disturbance and type or site of temporal lobe pathology. A number of these patients showed episodic aggressive behaviour disturbance—but an even higher proportion showed neurotic or psychotic disorders.

In the absence of clear clinical or electrophysiological evidence of disturbance in the temporal lobe, there is no more reason to "hypothesize" that "episodic rages etc. are the results of abnormal discharges involving circuits of the limbic lobe and the neocortex of the temporal lobe" than to suggest that neuroses or psychoes have a similar causation. Non-specific electroencephalographic changes are seen in varying proportions in groups of patients with all varieties of psychiatric disturbance, and even in normal subjects.

Yours, etc.,

I. PIERCE JAMES.

Private Bag 3,
Parkville, N.2,
Victoria.
November 27, 1959.

ŒSOPHAGEAL HIATUS HERNIA.

SIR: Dr. Goulston (MED. J. AUST., April 4, 1959) correctly showed that surgery is seldom needed for hiatus hernia; indeed, I decline operation so often that I have had printed a list of postural details for the referring doctor to give to his patient. Nevertheless, as remarked by Mr. C. J. Officer Brown and Mr. K. N. Morris (MED. J. AUST., May 9, 1959) and Mr. W. Burfitt-Williams (MED. J. AUST., June 13, 1959), operation should at times be done. I then follow Collis, Kelly and Wiley[1] in placing the stitches which unite the limbs of the right crus in front of the œsophagus. This is at variance with Allison,[2] who, as is well known, placed his stitches behind.

Collis, Kelly and Wiley confirmed Barrett's[3] experiment on the isolated stomach, and hence believe that the angle of insertion is a factor preventing reflux. A similar state of affairs obtains where common bile duct enters duodenum. Hughes and Kernutt[4] demonstrated in 40 specimens that no leakage into common bile duct occurred from an artificially distended duodenum; presumably the oblique entry of the duct exerted an effective barrier to reflux. Again, the principle of tangential entry is used in ureterointestinal anastomosis because it allows reflux less often than does simple end-to-side union (Weyrauch[5]). In the repair of a patulous hiatus, anterior stitches displace the œsophagus to the rear, thus ensuring tangential entry into the stomach. Further, union of the limbs of the right crus in front of the œsophagus turns the hiatus into a tunnel, and I believe with Tanner[6] that a tunnel is less likely to permit recurrence than is a hole.

The stitches should not go deep into the limbs of the crus, because of the risk of damaging the posterior branch of each phrenic nerve (Collis, Satchwell and Abrams[7]). Nevertheless, it is as easy, or easier, to place the stitches in front as it is to place them behind the œsophagus, and this applies whether operating from above or below the diaphragm; why Collis, Kelly and Wiley recommended a thoraco-abdominal incision I do not know. For a deep ulcer above the diaphragm, or for a hernia reported as irreducible by the radiologist, I use thoracotomy, but on most occasions, like Mr. Burfitt-Williams, I prefer the abdominal approach. Preliminary œsophagoscopy is required not only to estimate the damage done by reflux, but also, it since appears (McConchie[8]), to exclude coexistent œsophageal cancer.

Yours, etc.,

W. W. WOODWARD.

General Hospital,
Launceston, Tasmania.
Undated.

[1] *Thorax*, 1954, 9 : 175.
[2] *Surg. Gynec. Obstet.*, 1951, 92 : 419.
[3] *Proc. roy. Soc. Med.*, 1952, 45 : 279.
[4] *Aust. N.Z. J. Surg.*, 1954, 23 : 223.
[5] *Ann. Roy. Coll. Surg. Engl.*, 1956, 18 : 343.
[6] *Proc. roy. Soc. Med.*, 1958, 51 : 31.
[7] *Thorax*, 1954, 9 : 22.
[8] Lecture at Sydney meeting of Royal Australasian College of Surgeons, August, 1959.

Medical Matters in Parliament.

HOUSE OF REPRESENTATIVES.

THE following extracts from *Hansard* relate to the proceedings of the House of Representatives on November 26, 1959.

Pharmaceutical Benefits.

MR. THOMPSON: I ask the Minister for Health a question. Can the honorable gentleman say when the new pharmaceutical benefits will come into operation? Will they commence on 1st January next? Also, what will be the position with regard to drugs that are not covered by the pharmaceutical benefits scheme? Will there be anything on the prescriptions issued by doctors to show whether the drugs prescribed are covered by the scheme?

DR. DONALD CAMERON: The provisions of the recently passed National Health Bill, which apply to pharmaceutical benefits, will not be proclaimed to come into operation on 1st January. At the request of the chemists, I have agreed to delay the proclamation of that part of the act for sufficient time to enable the chemists to make the necessary administrative arrangements for the changeover. However, the relevant provisions will be proclaimed as soon as possible in the New Year.

The actual position with regard to prescribing under the new arrangement will be precisely the same as it is now. When the patient goes to a doctor the doctor will write a prescription in duplicate for a pharmaceutical benefit, just as he does now. The patient will take that prescription to the chemist, who will dispense it for the patient just as he does now, but the chemist will be entitled and, indeed, expected to charge the patient 5s. The adjustment in respect of the remainder of the cost of the prescription will be made, again just as it is now, from the returns sent in by the chemist to the Department of Health. The chemists at present are paid monthly.

MR. THOMPSON: What will be the position in respect of drugs not on the list? Will there be for them a different kind of prescription?

DR. DONALD CAMERON: The position there will be the same as it is now. The doctor will write a prescription for a drug that is not a pharmaceutical benefit in the same way as he does now. The prescription will not carry the letters "N.H.S." on the top of it, and will be dispensed by the chemist as at present.

MR. THOMPSON: It will not be in triplicate form.

MR. SPEAKER: Order! I think this matter is developing into a debate.

SENATE.

THE following extracts from *Hansard* relate to the proceedings of the Senate on November 17, 1959.

Quarantine Station, Sydney.

SENATOR MCKENNA asked the Minister representing the Minister for Health, upon notice:

1. For how many persons is accommodation available at the North Head Quarantine Station in Sydney?

2. What type of accommodation is so available?

3. By how many persons, apart from quarantine staff, and during what periods, has the accommodation been used during the past ten years?

4. Would any of the accommodation be suitable for the use of chronically ill, or convalescent, patients and if not, why not?

5. Can the Government consider making available some, and if so, how much, of the accommodation for the said patients?

SENATOR HENTY: The Minister for Health has now furnished the following reply:

1. Apart from any permanent staff, there is accommodation for 476 persons at North Head Quarantine Station.

2. The accommodation provides—(a) hospital and observation block, consisting of one ward of sixteen beds, two wards of eight beds, sixteen single rooms and staff quarters for thirteen; (b) single and double bedroom accommodation for 191 persons and 12 staff; and (c) dormitory accommodation originally designed for Asiatic or steerage passengers in two-tier bunks, for 164 persons, plus sixteen rooms of a similar standard to take three each. Accommodation has communal toilets, bathing and dining facilities.

3. 1950—Nil.

1951—69 persons, 25th January-9th February; 38 persons, 16th February-21st February; 57 persons, 17th February-24th February; 34 persons, 12th March-16th March; 1 person, 19th March-29th March.

1953—Nil.

1954—One person, 8th April-12th April.

1955—Nil.

1956—One person, 9th September-13th September; three persons, 20th September-3rd October.

1957—One person, 8th August-19th August.

1958—One person, 2nd August-16th August.

1959—One person, 21st June-23rd June; 31 persons who were migrating detainees over varying periods.

4. The accommodation is not suitable for chronically ill or convalescent patients because of the old design of buildings and because of difficulty of transporting this type of patient to other accommodation at short notice should the station be closed for quarantine purposes.

5. No.

Australian College of General Practitioners.

GENERAL PRACTITIONERS' CONVENTION, MELBOURNE, 1960.

THE Australian College of General Practitioners is holding a Convention in Melbourne from October 10 to 15, 1960, at the Chevron Hotel, St. Kilda Road, Melbourne. There will be a full and interesting programme of lectures and discussions for general practitioners and, of course, a full social programme for members of the Convention and their ladies and families, if they bring them. In Melbourne, the time of the Convention coincides with the opening of the Spring Racing Carnival, and Melbourne and its gardens are at their best.

Accommodation requirements have been reserved at Chevron Hotel and other hotels, and will be allotted in order of priority of application. The membership fee for the convention has been fixed at £4 4s. for members and associates of the Australian College of General Practitioners, and £6 6s. for non-members, and covers the inclusion of wives and families in social activities. All applications for membership and accommodation should be addressed direct to the Organizing Secretary of the Convention, 132 Grey Street, East Melbourne; but members of other Faculties and non-members in those States may obtain further information from the honorary secretaries of those State Faculties.

Post-Graduate Work.

THE POST-GRADUATE COMMITTEE IN MEDICINE IN THE UNIVERSITY OF SYDNEY.

General Revision Course, 1960.

THE Post-Graduate Committee in Medicine in the University of Sydney announces that its annual general revision course will be held for two weeks from Monday to Friday, May 9 to 20, 1960, inclusive. The main theme of the course is therapeutics. As in former years, the programme will be a comprehensive survey of modern trends in diagnosis and treatment of special value to general practitioners, consisting of lectures, special demonstrations, symposia and discussions. Social activities will include a cocktail party, wine-tasting, and the thirteenth Annual Post-Graduate Oration in the Great Hall of the University of Sydney, to be given by Dr. George Willcocks on "The Sydney Hospital Group at the Turn of the Century"; all members of the course and their wives are invited to be present. A golf

competition for the Post-graduate Golf Cup, open to members, will also be held, and the Brydon Cup will be for competition by country members.

The fee for attendance is £12 12s. full-time or £6 6s. for one week or part-time. Fees and travelling expenses incurred by practising members of the profession in attending this course may be claimed as income tax deductions.

Financial Assistance to Practising Doctors in Isolated or Remote Areas of Australia.

The Post-Graduate Committee in Medicine has set aside a sum made available by the Post-Graduate Medical Foundation to assist practising doctors in isolated or remote areas in Australia towards payment of fares and fees in attending the general revision course in 1960. Grants up to £50 per person will be made. Application is essential.

Method of Enrolment.

Early written application to attend the general revision course and to receive financial assistance should be made to the Honorary Director, The Post-Graduate Committee in Medicine, 131 Macquarie Street, Sydney. Telephones: BU 4497-8. Telegraphic Address: "Postgrad Sydney".

Notes and News.

Pharmaceutical and Medical Benefits.

The Commonwealth Minister for Health, Dr. D. A. Cameron, in a statement issued on December 2, 1959, has said that arrangements are going ahead to implement the National Health amendments provided for in the legislation recently passed by Parliament.

Pharmaceutical Benefits.—A very wide range of benefits covering the majority of prescriptions written by doctors is to be introduced in place of the present restricted list. A charge of 5s. per prescription will be made for pharmaceutical benefits. It is proposed that the extended range of benefits and the charge of 5s. per prescription will commence on March 1, 1960. The charge will not be made to pensioners in possession of a Pensioner Medical Service Entitlement Card.

Medical Benefits.—Increased Commonwealth benefits for some 140 medical services will be paid from January 1, 1960. The largest increases are for major operations, where the new Commonwealth benefit will rise in some cases from £11 5s. to £22 10s. For many less serious operations increased benefits will also be paid. In addition, registered organizations will pay increased fund benefits for these medical services. These increased fund benefits will mean a small increase in contributions, the amount of the increase depending on the particular organization and the level of insurance.

The Association of Cancer Institute Directors.

The directors of cancer research institutes in America have formed an organization, The Association of Cancer Institute Directors, for the purpose of exchanging information among the various institutes. The organization is composed of the senior scientific executives of those institutions and autonomous divisions and departments whose principal activities are concerned with the study of malignant disease and the treatment of cancer patients. Officers elected at the first meeting include: *President*, Dr. George Moore, Director, Roswell Park Memorial Institute; *Vice-President*, Dr. Sidney Farber, Director of Research, Children's Cancer Research Foundation, Boston, Massachusetts; *Secretary-Treasurer*, Dr. R. Lee Clark, Jr., Director and Surgeon-in-Chief, The University of Texas M. D. Anderson Hospital and Tumor Institute, Houston, Texas.

The Association of Cancer Institute Directors has been designed to support investigations of the causes, nature, treatment and prevention of malignant diseases; to encourage the exchange of ideas, information, personnel and special facilities between groups with predominant interests in cancer; to foster educational opportunities in the biomedical sciences; to provide guidance to private and civil organizations concerning cancer research, education and the care of cancer patients; and to expedite the dissemination of information by the meeting together of the scientific executive officers of cancer institutes. Members

DISEASES NOTIFIED IN EACH STATE AND TERRITORY OF AUSTRALIA FOR THE WEEK ENDED NOVEMBER 14, 1959.[1]

Disease.	New South Wales.	Victoria.	Queensland.	South Australia.	Western Australia.	Tasmania.	Northern Territory.	Australian Capital Territory.[2]	Australia.
Acute Rheumatism	..	3(2)	2(1)	..	..	..	..	..	5
Amœbiasis	..	..	..	..	..	..	..	..	..
Ancylostomiasis	..	..	7	..	..	..	7	..	14
Anthrax	..	..	..	..	..	..	..	..	..
Bilharziasis	..	..	..	..	..	..	..	..	..
Brucellosis	1	..	..	..	1	..	..	..	2
Cholera	..	..	..	..	..	..	..	..	..
Chorea (St. Vitus)	..	..	..	..	..	..	..	..	..
Dengue	..	..	..	..	..	..	..	..	..
Diarrhœa (Infantile)	2(1)	10(10)	22(9)	..	..	..	4	..	38
Diphtheria	..	..	..	2(2)	..	..	..	..	2
Dysentery (Bacillary)	..	..	1	..	..	..	..	..	1
Encephalitis	..	4(4)	..	..	..	..	..	..	4
Filariasis	..	..	..	..	..	..	..	..	..
Homologous Serum Jaundice	..	..	..	..	..	..	..	..	..
Hydatid	..	..	..	..	..	..	..	..	..
Infective Hepatitis	107(34)	48(25)	6(1)	17(7)	7(3)	..	..	..	185
Lead Poisoning	..	..	..	..	..	..	..	..	..
Leprosy	..	..	..	..	..	..	..	..	..
Leptospirosis	..	..	3(2)	..	..	..	..	..	3
Malaria	..	..	2(2)	..	..	..	1	..	3
Meningococcal Infection	2	..	1	..	..	..	..	..	3
Ophthalmia	..	..	..	..	2	..	..	..	2
Ornithosis	..	..	..	..	..	..	..	..	..
Paratyphoid	..	..	..	..	..	..	..	..	..
Plague	..	..	..	..	..	..	..	..	..
Poliomyelitis	..	..	..	..	..	..	..	..	..
Puerperal Fever	1	..	1	..	..	..	..	..	2
Rubella	..	35(26)	..	2	3(2)	..	..	..	40
Salmonella Infection	..	..	..	..	..	..	..	..	..
Scarlet Fever	11(4)	21(16)	1(1)	1(1)	1	..	..	..	35
Smallpox	..	..	..	..	..	..	..	..	..
Tetanus	..	..	1	..	..	..	..	..	1
Trachoma	..	..	..	..	18	..	31	..	49
Trichinosis	..	..	..	..	..	..	..	..	..
Tuberculosis	24(16)	23(16)	21(8)	8(4)	12(10)	4(3)	2	..	94
Typhoid Fever	..	..	..	..	..	..	..	..	..
Typhus (Flea-, Mite- and Tick-borne)	..	..	..	..	..	..	..	..	..
Typhus (Louse-borne)	..	..	..	..	..	..	..	..	..
Yellow Fever	..	..	..	..	..	..	..	..	..

[1] Figures in parentheses are those for the metropolitan area.

[2] No case of notifiable disease was reported for this week in the Australian Capital Territory.

of the Association include representatives of The National Cancer Institute, Bethesda, Sloan-Kettering Institute for Cancer Research, New York, Memorial Center for Cancer and Allied Diseases, New York, Roswell Park Memorial Institute, Buffalo, The University of Texas M. D. Anderson Hospital and Tumor Institute, Houston, Philadelphia Institute of Cancer Research, Pondville Hospital, Boston, Detroit Institute of Cancer Research, and Children's Cancer Research Foundation, Boston. The Association will, in the future, consider members from among the scientific directors of cancer institutes of foreign countries.

International Course in Reconstructive Nasal Surgery.

An international course on "The Fundamentals of Reconstructive Surgery of the External Nasal Pyramid and the Nasal Septum" will be presented in Mexico City from July 4 to 15, 1960. It will be held under the auspices of the Escuela Nacional de Medicina e Division del Doctorado, and with the cooperation of the American Rhinologic Society. The guest professor will be Dr. Maurice H. Cottle, Professor of Otolaryngology at the Chicago Medical School and founder of the American Rhinologic Society. Dr. Cottle will be assisted by a faculty of specialists from the United States and Mexico. The lectures will be presented simultaneously in English and Spanish.

Applicants for the course must be diploma holders of the American Board of Otolaryngology, or have equivalent status. Application forms and other information may be obtained from Dr. Robert M. Hansen, Secretary of the American Rhinologic Society, 1735 North Wheeler Avenue, Portland 12, Oregon. Early application is essential.

Eastern Medicine.

The history of Eastern medicine occupies the whole of a special number of *Hamdard Medical Digest* for April-May, 1959. Articles, taken from various sources with acknowledgement, include in their cover Egyptian, Indian, Jewish, Islamic, Turkish, Persian, Chinese and Japanese systems of medicine from the earliest times. As might have been expected, the magazine, which is published in Pakistan, gives some prominence to Islamic medicine and quite rightly stresses the debt owed to Muslim doctors for their preservation and development of medicine during Europe's Dark Ages. Many interesting and attractive illustrations are included.

A New Plant for Kodak (Australasia) Pty. Ltd.

Kodak (Australasia) Pty. Ltd. is building a new 55-acre plant at East Coburg, Victoria. The first stage, a six-building manufacturing unit producing roll, sheet and X-ray film, will be in full operation early in 1960, and work has already begun on the second stage.

Royal Flying Doctor Service.

Dr. George Bell, of Sydney, has been elected Federal President for the next two years of the Royal Flying Doctor Service of Australia. Dr. Bell has been actively associated with the work of the service since it was first started by the late Reverend John Flynn in 1928. After two years he will be succeeded as Federal President by Dr. Harold G. Dicks of Western Australia.

Nuffield Dominion Travelling Fellowship in Medicine.

The Chairman of the Nuffield Foundation Australian Advisory Committee, Mr. Colin Syme, has announced that a Nuffield Dominion Travelling Fellowship in Medicine for 1960 has been awarded to Dr. V. C. Marshall, Associate Assistant Surgeon to Professor Maurice Ewing at the Alfred Hospital, Melbourne, and the Royal Melbourne Hospital. Dr. Marshall will undertake research under Mr. David Patey at the Middlesex Hospital Medical School, London, in the field of fluid and electrolyte imbalance in surgery.

Federation of Country Local Associations (N.S.W.).

The F.O.C.L.A. course for 1960 will be held at Tamworth from March 21 to 25, inclusive. A comprehensive programme of lectures and presentation of cases has been arranged. Visiting lecturers include Dr. A. McGuinness, Dr. D. Ross, Dr. J. Beveridge, Professor B. Mayes, Mr. R. Hodgkinson and Mr. J. Grant.

There will be the usual annual dinner and various other social occasions at night. All doctors and their wives are invited to attend. The cost of the course will be nine guineas. Anyone wishing to attend should get in touch with the Honorary Secretary, Dr. D. Berg, 448 Peel Street, Tamworth, as soon as possible, so that suitable accommodation can be arranged.

Deaths.

THE following deaths have been announced:

NIHILL.—Thomas Victor Nihill, on December 3, 1959, at Ouyen, Victoria.

SHELTON.—James Newman Shelton, on December 5, 1959, at Melbourne.

Diary for the Month.

DECEMBER 22.—New South Wales Branch, B.M.A.: Hospitals Committee.

1960.

JANUARY 8.—Queensland Branch, B.M.A.: Council Meeting.

JANUARY 8.—Tasmanian Branch, B.M.A.: Branch Council.

Medical Appointments: Important Notice.

MEDICAL PRACTITIONERS are requested not to apply for any appointment mentioned below without having first communicated with the Honorary Secretary of the Branch concerned, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

New South Wales Branch (Medical Secretary, 135 Macquarie Street, Sydney): All contract practice appointments in New South Wales.

South Australian Branch (Honorary Secretary, 80 Brougham Place, North Adelaide): All contract practice appointments in South Australia.

Editorial Notices.

ALL articles submitted for publication in this Journal should be typed with double or treble spacing. Carbon copies should not be sent. Authors are requested to avoid the use of abbreviations, other than those normally used by the Journal, and not to underline either words or phrases.

References to articles and books should be carefully checked. In a reference to an article in a journal the following information should be given: surname of author, initials of author, year, full title of article, name of journal, volume, number of first page of article. In a reference to a book the following information should be given: surname of author, initials of author, year of publication, full title of book, publisher, place of publication, page number (where relevant). The abbreviations used for the titles of journals are those of the list known as "World Medical Periodicals" (published by the World Medical Association). If a reference is made to an abstract of a paper, the name of the original journal, together with that of the journal in which the abstract has appeared, should be given with full date in each instance.

Authors submitting illustrations are asked, if possible, to provide the originals (not photographic copies) of line drawings, graphs and diagrams, and prints from the original negatives of photomicrographs. Authors who are not accustomed to preparing drawings or photographic prints for reproduction are invited to seek the advice of the Editor.

Original articles forwarded for publication are understood to be offered to THE MEDICAL JOURNAL OF AUSTRALIA alone, unless the contrary is stated.

All communications should be addressed to the Editor, THE MEDICAL JOURNAL OF AUSTRALIA, The Printing House, Seamer Street, Glebe, New South Wales. (Telephones: MW 2651-2-3.)

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